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PC# 0310240005--Cook County  
Clark/Blue Island  
a.k.a. Premcor Refining Group Inc.  
ILN 000 508 156  
SF/HRS

Volume 1 of 2

# CERCLA

## Combined Assessment Report



**CERCLA COMBINED ASSESSMENT REPORT**

for:

**CLARK/BLEU ISLAND  
BLEU ISLAND, ILLINOIS  
ILN 000 508 156**

PREPARED BY:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
BUREAU OF LAND  
DIVISION OF REMEDIATION MANAGEMENT  
OFFICE OF SITE EVALUATION

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## 1.0 INTRODUCTION

In September of 2001, the Illinois Environmental Protection Agency's (Illinois EPA) Office of Site Evaluation (OSE) was tasked by United States Environmental Protection Agency (U.S. EPA) Region V to conduct a Combined Assessment (CA) at the Clark/Blue Island (CBI) Site located in Blue Island, Illinois. The CBI site is located at the corner of 131<sup>st</sup> Street and Kedzie Avenue in Blue Island, Illinois (Figure - 1), and consists of an inactive oil refinery, an adjacent navigable water way (Cal Sag Channel), and the areas surrounding the refinery that were impacted by air borne deposition of spent catalyst materials. The refinery had a history of air borne spent catalyst releases, surficial releases of raw materials and products, discharges to the Cal Sag Channel (Cal Sag), and associated pipeline releases. The CBI Site (ILN 000508156) was placed on the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) on March 15, 2001. The Illinois EPA's Office of Site Evaluation prepared a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Combined Assessment Field Activity Work Plan, dated October 22, 2001, to investigate the effects of air borne deposition of spent catalyst on areas surrounding the refinery, and to investigate operational impacts to the surface water exposure pathway. Investigation of the refinery property was to be conducted at a later date; however, negotiations for a Consent Order with the Potentially Responsible Party (PRP) have postponed this activity. The CA is performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) commonly known as Superfund.

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300) requires a Preliminary Assessment (PA) be performed on all sites entered into the

Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS). If a detailed Site Inspection (SI) is considered necessary, and if site conditions warrant, the CA is intended to:

- 1) Eliminate from consideration those sites that pose not threat to public health or the environment;
- 2) Determine the potential need for a removal action;
- 3) Set priorities for future investigations;
- 4) Gather existing or additional data to facilitate later components of the site assessment process.

The CA integrates PA/SI activities typically performed during the PA (information gathering, site reconnaissance) with activities typically performed during the SI (review of data, development of field work plans, field sampling, filling data gaps) to achieve one continuous site investigation.

If the determination is made that the site is NPL caliber, additional data will likely be needed to complete the assessment. A sampling plan to accommodate removal and site assessment needs, as well as initial remedial needs will be developed. The need for site sampling will be based on a reasonable understanding of the site in order to assure that adequate data will be collected for the removal assessment and the preparation of the Hazard Ranking System (HRS) score. The need for the initial sampling for the remedial investigation will also be considered. Upon completion of the data gathering, there will be a determination of whether the site should be forwarded

within the Superfund process, either through the remedial or removal programs. Based on the preliminary HRS score and removal program information, the site will then either be designated as No Further Action (NFA), or carried forward as an NPL listing candidate.

The CA will address all the data requirements of the revised HRS using field screening and NPL level Data Quality Objectives (DQO's) prior to data collection. It will also provide data in a format to support remedial investigation work plan development. Only sites that appear to score high enough for NPL consideration and that have not been deferred to another authority will move on to an Expanded Site Inspection (ESI).

## **2.0 SITE BACKGROUND**

### **2.1 Site Description**

The CBI site is located in an unincorporated area of Cook County between the towns of Blue Island, Alsip, and Robbins, Illinois (Figure-2). The CBI site is currently owned by the Premcor Refining Group, Inc. (Premcor). The site address is commonly known as 131<sup>st</sup> and Kedzie Avenue, Blue Island, Cook County, Illinois. It is bordered to the north by 127<sup>th</sup> Street, to the south by the Calumet Sag Channel (Cal Sag) a navigational channel, to the east by railroad tracks, and to the west by industrial facilities and eventually Pulaski Rd.(Figure-3). It is located in Sections 35 and 36, Township 37 North, Range 13 East of the Third Principal Meridian, Cook County, Illinois. Mosquito Creek (also known as Wireton Creek) is an intermittent stream that bisects the northwestern portion of the property, exists the property to the east, runs along

Wireton Road and merges with Stony Creek (a perennial stream), which drains into the Cal Sag upstream of the site (Figure-4).

Property use adjacent to the refinery is mainly industrial/commercial; however, residential properties exist just south of the refinery between 131<sup>st</sup> Street and the Cal Sag. The area south of the Cal Sag (Village of Robbins) is predominantly residential. The area east and northeast of the adjacent industrial/commercial properties (Village of Blue Island) is predominantly residential. Residential properties within the Village of Alsip exist north of Burr Oak Road and west of Homan Avenue. Public Golf courses, public parks, and several schools are all located within one-mile of the site. The currently inactive Robbins incinerator is located directly south of the refinery property on the southern bank of the Cal Sag Channel.

The CBI site occupies approximately 166 acres, which have been divided into seven (7) areas in the March 2004 Consent Order, based on existing and former site activities (Figure-5). These include the: 1) Northwest Property; 2) West Property; 3) Northwest Terminal; 4) Southwest Terminal; 5) Triangle Property; 6) Administrative Offices; and, 7) Parco Food Property (or Cookie Factory). The Northwest Property is predominantly undeveloped property consisting of grasslands, shrubs and trees. A brick and steel warehouse building, and some railroad tracks are located on the northern portion of this area. The warehouse was reportedly used to store spent catalyst and drummed materials (Illinois EPA, BOL File). Spent catalyst, off-specification resins, and sulfur were reportedly dumped or buried at this portion of the site. Piles of catalyst were observed in this area at the time of the investigation. A low lying drainage area (part of Mosquito Creek) crosses the Northwest Property from west to east to a culvert that passes under

Homan Avenue. Surface water from the Northwest Terminal was reported to have discharged to this drainage way. An area used for fire training is also located at the southern portion of the Northwest Property.

The West Property (Figure-5) is an undeveloped area covered with vegetation. No structures are present on this portion of the property. It is unknown whether this area has been used for disposal of chemicals or products associated with refinery operations.

The Northwest Terminal area (Figure-5) consists of aboveground storage tanks, aboveground and underground piping, a truck loading terminal, and the former lead plant (URS, 2004). Historical releases of hazardous materials have occurred at this location.

The Southwest Terminal (Figure-5) extends to the Cal Sag and consists of ASTs, aboveground and underground piping, the marine dock, the Hammond Pipeline Pump Station, the Westshore Pipeline Pump Station, a transformer building, the water treatment plant, the canal water intake building, and a truck loading station (URS, 2004). Historical releases of hazardous materials have occurred at this location. Product recovery wells were installed at the marine dock area in response to releases from the Southwest Terminal. Prior to installation of the wastewater treatment system, runoff from the refinery and discharge from a six-foot diameter storm sewer that crosses the site from the triangle property, discharged straight into the Cal Sag.

The Triangle Property (Figure-5) was the location of the refinery. Historical releases of hazardous materials have occurred at this location. Spent catalyst releases occurred from this

location on several occasions. Catalyst released into the air was deposited throughout the City of Blue Island. During one release, Eisenhower High School, located north of the refinery across Stony Creek, was forced to close temporarily due to the impacts from the release.

The Administration Offices (Figure-5) area contains the administrative office, laboratory operations, employee parking, and the electrical switchgear station (URS, 2004). Clark/Premcor also owns residential property south of 131<sup>st</sup> Street; however, no refinery or storage activities have occurred at those locations.

The Parco Foods Property (Figure-5) has been occupied by a variety of companies before it was purchased by Premcor in 1998 (URS, 2004). The building was reportedly demolished in 2001/2002, and the demolition debris was taken to the Triangle Property and used as fill. In 1993 two petroleum USTs were removed and a No Further Action Letter was issued by the State. This area was purchased by Premcor for additional storage space.

Clark Oil previously owned a chemical plant situated next to the northwest crude tank field. Tetraethyl lead was added to gasoline in a small building located at the corner of this property. This property was sold in 1985, but was still in operation as a chemical plant at the time of this investigation.

Surface water runoff from the Crude Oil Tank Farm (Area 3) has historically drained into Mosquito Creek. Surface water runoff from the refinery and tank farms reportedly discharged to the Cal Sag. At some point during operation, surface water runoff was channeled to a

wastewater treatment system and discharged to the local Publicly Owned Treatment Works (POTW) facility.

The majority of the site is sparsely vegetated; however, the Northwest Property and the West Property are mostly undeveloped and are overgrown by grass, shrubs, and trees.

Topographically, the site is relatively flat and slopes towards the Cal Sag. Natural runoff patterns are disrupted in the tank farm areas by containment berms.

The surficial geology of the Blue Island area consists of Quaternary age sediments of the Equality and Henry Formations (Willman, 1971). These sediments consist of glacial lake floor deposits (Lake Plain sediments), and erosional channel material from outlets of glacial lakes (Glacial Sluiceway sediments). Glacial lake sediments from the Chicago Lake Plain extend from Lake Michigan to an area approximately 5-miles west of Blue Island. Glacial Sluiceway deposits near Blue Island are present along the course of Cal Sag Channel and Stony Creek. The Lake Plain sediments consist of thin deposits of silt, clay, and sand, largely underlain by glacial till. The Glacial Sluiceway sediments are predominantly sand and gravel outwash deposits. Glacial deposits are between 25 and 50 feet thick near the site (Illinois EPA website).

Silurian aged bedrock formations are present beneath glacial sediments in the Blue Island area. Silurian aged rocks in the area consist of the Alexandrian and Niagarian Series formations (Willman, 1971). The strata are almost entirely dolomite that ranges from extremely argillaceous, silty, and cherty to exceptionally pure. The upper part consists of reefs of massive to well bedded pure dolomite. Bedrock outcrops at a few locations in the Blue Island area.



Bedrock may have been encountered in the Cal Sag near the marine terminal dock during collection of sediment samples.

Two water bearing aquifers are present in the Blue Island area, the Calumet aquifer and the Silurian-Devonian aquifer (Kay, *et. al.*, 1996). The Calumet aquifer consists of surficial sands and permeable fill deposits that range from 0-70 feet in thickness. This aquifer is unconfined and is recharged by direct infiltration from precipitation. The Calumet aquifer is in good hydraulic connection with surface-water bodies. The depth to water is generally less than 15 feet deep. A confining unit ranging in thickness from 0-200 feet is regionally present between the Calumet aquifer and the Silurian-Devonian aquifer (Kay, *et. al.*, 1996). Just south of Blue Island, the confining layer is absent and the Silurian-Devonian aquifer is in direct hydraulic connection with the overlying Calumet Aquifer. The Silurian-Devonian aquifer consists of limestone and dolomite bedrock formations. The City of Blue Island obtains its drinking water from a Lake Michigan municipal water supply.

## **2.2 Site History**

Great Lakes Refinery began operations at the current site in the mid-1920s. Emery Clark (Clark Oil Company) purchased the facility in 1945. Within a three-year period from 1964 to 1966, Clark completed two major expansion projects at the Blue Island refinery. A multi-million dollar petrochemical complex which began operation in 1964, and an 11-million dollar expansion of the refinery itself, which enabled the plant to increase crude oil throughput from 35,000 to 55,000 barrels a day. Subsequent modifications increased capacity to 80,000 bpd.

Apex Oil Company, a St. Louis based trading firm purchased the refinery from Clark in 1981.

Apex sold the petrochemical complex near the refinery in 1985. A Canadian based corporation, Horsham Corporation, acquired the Clark Operating Company from Apex in November 1988. Horsham Corporation subsequently sold the company to its current owners, the Blackstone Partners Group II in November 1997. Blackstone divested Clark's retail operations and brand name in July 1999 and changed the name of the refinery company to The Premcor Refining Group Inc. in May 2000. In January 2001, Premcor made the economic decision to end refinery operations; however, storage and distribution were to continue at the site. In October and November of 2001, the Illinois EPA's OSE conducted a Combined Assessment of the Premcor facility, adjacent residential areas, and adjacent waterways, to determine what if any environmental impact had occurred from refining operations. On January 18, 2004 a complaint from the State was filed against Premcor which outlined numerous releases of petroleum and chemical compounds. <sup>+</sup> On March 16, 2004, the Circuit Court of Cook County entered a Consent Order between Premcor and the State of Illinois to address releases to land and waters of the State. The Consent Order requires Premcor to perform a remedial investigation and feasibility study at the site.

Refinery operations included distillation, hydrocracking, fluid catalytic cracking, alkylation, hydrotreating, reforming, product treatment, blending sulfur recovery, and vapor recovery. The refinery was designed to maximize high-octane gasoline production. Major products produced at the refinery included: liquefied petroleum gas (LPG), gasoline, distillate fuels, sulfur, propylene, No. 6 fuel oil, and asphalt or coker charge.

Numerous releases of petroleum, and chemicals used during refining operations, have occurred at the site. These releases have been of known and unknown quantities. Due to a release in 1991, the State filed a complaint that was amended five times to include additional releases.

\* Spent FCC catalyst has been released and deposited over a significant area of Blue Island.

Catalyst releases forced the temporary closure of a nearby High School in 1994. On September 9, 1998, the United States filed a complaint against Premcor. Consent Orders were entered in April and June of 2002. *The Consent Orders settled alleged liability for air pollution violations and for operation of the tank farms only.* According to the March 2004 Consent Order, free phase hydrocarbons have been identified near tank farm areas, the Administration Office area, transfer pipelines, and the truck loading dock. Product recovery activities have taken place adjacent to the Cal Sag Channel in response to a visible sheen on the water.

### **2.3 Previous Investigations**

At least seven (7) investigations were performed at the Clark/Premcor facility by environment consultants from May 1992, to the present (URS, 2004). Until September of 2001, investigations focused primarily on certain areas of the site. In September of 2001, a due diligence investigation was performed on the entire site for the purposes of obtaining environment liability insurance. Soil and groundwater samples were collected from each of the areas of concern. Compounds to be analyzed varied at each location, but were predominantly total RCRA (Resource Conservation and Recovery Act) metals, BTEX (benzene, toluene, ethylbenzene, and xylenes), and PAHs (Polycyclic Aromatic Hydrocarbons). PCBs (Polychlorinated Biphenyls) were analyzed for at select locations. The investigation did not include offsite properties or adjacent water bodies. The Illinois EPA CA took place shortly after

the due diligence investigation in October and November of 2001. The Illinois EPA investigation focused primarily on offsite impacts to surrounding private properties and adjacent water bodies.

Results of the due diligence investigation identified petroleum contamination in the soil at various areas at the site, and identified free phase contamination in the soil and groundwater throughout the site. Lead contamination was observed near the former tetraethyl lead plant.

## **2.4 Regulatory Status**

Information currently available does not indicate that the Clark/Premcor site is under the authority of the Resource Conservation Recovery Act (RCRA), the Atomic Energy Act (AEA), Uranium Mine Tailings Action (UMTRCA), or the Federal Insecticide Fungicide or Rodenticide Act (FIFRA). Pursuant to a March 16, 2004 Consent Order between Premcor and the State of Illinois, Premcor will conduct a remedial investigation/feasibility study and site investigation at the site. The Illinois EPA's Federal Site Remediation Section will be monitoring technical compliance with the Consent Order.

## **3.0 COMBINED ASSESSMENT ACTIVITIES**

### **3.1 Sampling Activities**

On October 16 & 17, 2001, the Illinois EPA's OSE analyzed surficial soils at 43 offsite locations using X-Ray Fluorescence (XRF) technology to evaluate potential impacts from Fluid Catalytic Cracking (FCC) spent catalyst releases (Figure - 6). Spent catalyst was released into

the air at times when refining processes would fail. The spent catalyst would then be deposited from the air to the surrounding area. Shallow soils less than six inches in depth were analyzed for total metals using the XRF instrument at private residences, schools, and public parks in the surrounding communities of Blue Island, Alsip, and Robins. Sampling locations were heavily weighted in the prevailing wind direction. Sediment samples from Mosquito Creek, Stony Creek, and the Cal Sag Channel, were also analyzed using the XRF. On November 6-8, 2001, the OSE returned to the site to collect laboratory analytical samples from select areas previously analyzed with the XRF. In addition to collection of soil samples from residential areas beyond the refinery property, sediment and surface water samples were collected from Mosquito Creek, Stony Creek, and the Cal Sag Channel.

Soil, sediment, and surface water samples collected by the Illinois EPA's Office of Site Evaluation during the Combined Assessment were transferred to containers provided by Illinois EPA's Contract Laboratory Program. The sample containers were packaged and sealed in accordance with Illinois EPA's Office of Site Evaluation Program procedures. Samples were sent to various laboratories within the U.S. EPA Contract Lab Program for analysis. A complete analytical data package, including quality assurance review sheets is located in Appendix C.

### **3.1.1 Soil XRF Sample Locations**

On October 16 & 17, 2001, the OSE analyzed shallow surface soils at 43 locations throughout the communities of Blue Mound, Alsip, and Robins using XRF technologies (Figure-6). A catalyst pile located on the Northwest Property area was also analyzed. The Niton 700 Series XRF Instrument was used to analyze the total metal

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concentrations in soils less than six inches in depth. Sampling locations were selected in areas with the minimum amount of overhead obstruction since contaminants would have been air deposited. When vegetation was present, it would be peeled back or removed using either a decontaminated stainless steel trowel or shovel to expose the soil immediately below the vegetative layer. The XRF instrument would be placed directly on the soil to take the surface reading. Then soil from 1-2 inches, 3-4 inches, and occasionally 6-inches would be analyzed using the XRF instrument to determine the vertical distribution of metals in the soil. When all readings were recorded, the vegetative layer would be returned, and the location would be marked using a Trimble Pro-XR Global Positioning System (GPS) Unit. XRF results are presented in Table-1.

### **3.1.2 Sediment XRF Sample Locations**

Illinois EPA personnel attempted to collect sediment samples from Mosquito Creek, Stony Creek, and the Cal Sag Channel for XRF analysis on October 16 & 17, 2001 (Figure-7). Samples were collected to determine if spent catalyst releases or refinery operations had impacted surface water drainage ways. Samples were collected using a decontaminated stainless steel hand auger. Sediments were put into a plastic ziplock bag so they could be dried prior to analysis. Samples could only be collected from the following locations: 1) an upstream location of the Cal Sag Channel (S-101 4"-6"); 2) Stony Creek where it discharges to the Cal Sag Channel (S-102 Surface & 2"-3"); 3) Stony Creek, upstream from the confluence of Mosquito Creek and Stony Creek (S-103 0-6"); 4) Mosquito Creek at the confluence of Mosquito Creek and Stony Creek (S-104 0-3"); 5) Mosquito Creek at a culvert on the Northwest Property where Mosquito Creek crosses Homan Ave. (S-105 2"-6"); 6) Mosquito Creek where it enters the

Northwest Property (S-106 0-1" & 2"-4"); and, 7) Cal Sag Channel off of the east end of the barge loading dock (S-107 Surface). An attempt was made to collect samples from the west end of the barge loading dock area (S-108) and the surface water discharge location; however, no sample could be obtained. Bedrock may have been encountered and only gravel could be obtained. XRF results are presented in Table-1.

### **3.1.3 Laboratory Analytical Soil Samples**

Laboratory analytical samples were collected from 22 locations to confirm XRF sampling results November 6-8, 2001 (Figure-8). Samples were collected directly beneath the vegetative cover at a depth of 0-1" using a decontaminated stainless steel trowel. Samples were placed directly into designated U.S. EPA Contract Lab Program sample jars and analyzed for total metals including cyanide, and semi-volatile organic compounds.

### **3.1.4 Laboratory Analytical Sediment Samples**

Laboratory analytical sediment samples were collected from 15 sample locations on November 7 & 8, 2001, to determine if refining operations have impacted surface water drainage ways adjacent to the site (Figure-9). Samples were collected at upstream and downstream locations from the Cal Sag Channel, Stony Creek, and Mosquito Creek. Sediment samples were collected at varying depths of less than six inches (Table-2). Portions of the floor of the Cal Sag Channel near the barge loading dock area was bedrock, and or gravel and no sediment sample could be obtained. Samples were collected using either a decontaminated stainless steel hand auger or a decontaminated stainless steel Ponar dredge. Sediment samples were analyzed for the Target Compound List (TCL) which includes, Volatile Organic



Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Polychlorinated Biphenyls (PCBs), Pesticides, Total Metals, and Cyanide (Appendix-A).

### **3.1.5 Laboratory Analytical Surface Water Samples**

Six (6) surface water samples were collected from Mosquito Creek, Stony Creek, and the Cal Sag Channel on November 7 & 8, 2001, to assess impacts to surface water drainage ways from refining operations. Surface water samples were collected from upstream and downstream locations (Figure-9). Surface water samples were laboratory analyzed for the TCL (Appendix-A). During collection of S-101 at the upstream portion of the Cal Sag Channel, a barge passed through before the inorganic sample could be collected. A large amount of sediment was stirred up into the water as it passed. Surface water samples were collected from the surface of Stony Creek and Mosquito Creek using the sample jars. Surface water samples in the Cal Sag Channel were collected using a "Bacon Bomb" sampler at depths of approximately 8 feet below the surface.

### **3.2 Analytical Results**

All samples collected during this Combined Assessment were analyzed through the USEPA Contract Lab Program. Organic samples were sent to Liberty Analytical in Cary, North Carolina, and all inorganic samples were sent to Sentinel Inc. in Huntsville, Alabama. Proper Chain of Custody procedures were followed throughout the investigation from collection to analysis. Chain of Custody forms are attached in Appendix C.

For purposes of this report, analytical results from soil samples were compared to three different criteria to establish the risk to human health and the environment. They are the site background concentrations, Soil Chemical Data Matrix (SCDM) benchmarks (U.S. EPA, June 1994), and U.S. EPA Removal Action Levels (RALs). Contaminant concentrations found to be three times the background concentration are said to be “significantly above background”. Concentrations significantly above background can be used to establish an “observed release”, provided the hazardous substance can be attributed to the site. This is an important step in scoring exposure pathways under the Hazardous Ranking System (HRS) (U.S. EPA, November 1992).

Contaminant concentrations significantly above background may not represent a threat to human health and the environment. The Key Sample Summary Tables contain compounds which were detected at concentrations considered to be “significantly above background”. Values are in bold text if they exceed SCDMs or RALs.

SCDMs values are compound specific factor values and benchmark values, based on the physical, chemical, and radiological properties of a hazardous substance. These values are used when evaluating hazardous substances at a site using the HRS, and may be specific to the exposure pathway being evaluated. RALs are concentrations of hazardous substances that represent an imminent and substantial threat to human health and the environment. If RALs are exceeded, a time critical removal action may be warranted to eliminate the imminent and substantial risk.

Sediment samples results will be evaluated based on a comparison to background sediment concentrations. Concentrations three times above background will be considered “significantly

above background". Should attribution to refinery operations be demonstrated as well, contaminants of concern will meet observed release criteria as defined in the HRS. Sediment samples from intermittent streams will be compared to soil SCDMs. Sediment samples from perennial streams will be compared to Ontario Sediment Benchmarks (Queen's Printer for Ontario, August 1993) in a later section of this report to evaluate potential effects to aquatic plants and animals.

Surface water samples will be evaluated based on a comparison to background surface water concentrations. Concentrations three times above background will be considered "significantly above background". Should attribution to refinery operations be demonstrated as well, contaminants of concern will meet observed release criteria as defined in the HRS. Surface water samples will also be compared to acute and chronic fresh water SCDMs to evaluate risk to human health and the environment.

### **3.2.1 Soil Sample Analytical Results**

Twenty-three (23) soil samples were collected from 22 locations during the CA (Figure - 8). Samples were collected from residential properties, City parks, City right of ways, and schools located near the refinery. Sample locations were chosen based on XRF sample results, location, and visual observations. Samples were laboratory analyzed for SVOCs and inorganics. Nearly all of the soil samples were collected directly beneath the sod. This interval was selected since air borne deposition of contamination was expected to be the source of contamination in areas around the refinery, and there was insufficient data to warrant otherwise. Sample results were compared to concentrations observed in the background sample (X-101),

which was collected from the Elizabeth Conkley Woods Forest Preserve on Central Street, located west of the refinery (Figure - 10). Table-3 contains the laboratory analytical results for compounds detected above the sample quantitation limit or SQL. Table 6 contains the laboratory analytical results of key samples meeting observed release criteria.

Various SVOCs were detected in soil samples collected near the site (Table - 3); however, only eight (8) compounds were detected at concentrations meeting observed release criteria (Table - 6). Four samples were found to exceed the benzo(a)pyrene SCDM of 0.088 ug/kg at four locations (Table - 6)(Figure - 8). No removal action levels were exceeded.

Twelve (12) metals were detected in the soil samples at concentrations above the observed release criteria (Table - 6). All of these compounds can be naturally occurring. None of the Key Samples were found to exceed SCDMs or RALs.

### **3.2.2 Sediment Sample Analytical Results**

Sixteen (16) sediment samples were collected from fifteen (15) locations for laboratory analysis (Figure - 9). Seven (7) were collected from Mosquito Creek, three (3) were collected from Stony Creek, and six (6) were collected from the Cal Sag Channel. Eight (8) VOCs were reported at both estimated and detected concentrations from all of the sediment samples collected (Table - 2). Of those eight, only three compounds were found to exceed the observed release criteria (Table - 5). None of these compounds exceeded applicable SCDMs or RALs.

Thirty-one (31) SVOCs were reported at both estimated and detected concentrations from all of the sediment samples collected (Table - 2). Thirteen (13) of those compounds were present at concentrations exceeding observed release criteria (Table - 5). No SVOCs were detected above observed release criteria in sediment samples from the Cal Sag. Since Mosquito Creek is an intermittent stream, concentrations from the sediment samples can be compared to soil SCDMs and removal action levels. Benzo(a)pyrene was found to exceed the SCDM value of 88 ug/kg in both the background sample X-202 (210 ug/kg) and in sample X-208 (39000 ug/kg). The benzo(a)pyrene concentration in X-208 exceeds the RAL of 8800 ug/kg. Three other PAHs were also found to exceed SCDM values in sample X-208 (Table - 5).

Fourteen (14) pesticides were reported at both estimated and detected concentrations from all of the sediment samples collected (Table - 2). All fourteen were detected at concentrations above observed release criteria (Table - 5). Pesticides were detected in all three surface water bodies at concentrations above observed release criteria. Ten (10) pesticides were detected at concentrations greater than the soil SCDMs in samples from Mosquito Creek (bold numbers in Table - 5). No pesticide RALs were exceeded.

Table - 2 contains a list of inorganic parameters that were reported at both estimated and detected concentrations from all of the sediment samples collected. All of these parameters may be naturally occurring. Seventeen (17) of these compounds were detected at concentrations exceeding observed release criteria (Table - 5). Since Mosquito Creek is an intermittent stream, and is considered part of the overland flow segment of the surface water pathway, inorganic concentrations will be compared to soil SCDMs. Arsenic concentrations in X-206 and X-207

were found to exceed the arsenic SCDM of 0.43 mg/kg; however, the background sample from Mosquito Creek exceeded the SCDM as well. Nonetheless, arsenic concentrations from X-206 and X-207 are greater than three times above background, meeting the observed release criteria. None of the inorganic concentrations were found to exceed RALs.

For purposes of assessing potential impacts to surface water bodies, inorganic compounds are frequently compared to Sediment Quality Guidelines to determine if toxic chemicals from industrial, municipal, or non-point sources have accumulated in bottom sediments at concentrations that are a threat to the survival of bottom dwelling (benthic) organisms and their consumers. Section 6.0 of this report contains a comparison of compounds detected in Stony Creek and the Cal Sag Channel to concentrations outlined in the Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario (Queen's Printer for Ontario, August 1993).

### **3.2.3 Surface Water Sample Analytical Results**

Six (6) surface water samples were collected from Mosquito Creek, Stony Creek, and the Cal Sag Channel (Figure - 9). Two surface water samples were collected from each water body at an upstream location and a downstream location. Surface water samples were analyzed for the TCL. Acetone and cis-1,2-Dichloroethene were detected at estimated concentrations in sample S-103 (Table - 4). This was the background sample for Stony Creek. At the time of collection, there appeared to be a film or sheen present on the water (Appendix B, Photo 8-Roll 4). No VOCs were detected at concentrations exceeding observed release criteria.

Diethylphthalate, atrazine, fluoranthene, and bis(2-Ethylhexyl)phthalate were detected at estimated concentrations in various surface water samples. None of these compounds were detected at concentrations exceeding observed release criteria.

The background surface water sample for Stony Creek (S-103) was the only sample to contain pesticides at estimated concentrations, and concentrations above the Sample Quantification Limit (SQL) (Figure - 9, and Table - 4). The background pesticide concentrations do not appear to be attributable to the Clark Refinery.

Various inorganic compounds were detected in surface water samples at estimated concentrations, and concentrations above the SQL (Table - 4). Seven (7) inorganic compounds were detected in surface water samples at concentrations exceeding observed release criteria (Table - 7). Lead was detected in Mosquito Creek sample S-106 at a concentration of 8.7 ug/L, which is above the SCDM of 2.5 ug/L. That was the only inorganic compound detected above SCDM thresholds.

### **3.3 Additional Data**

#### **3.3.1 Soil XRF Sample Result**

On October 16 & 17, 2001, the OSE analyzed shallow surface soils at 43 locations throughout the communities of Blue Mound, Alsip, and Robins using XRF technologies (Figure-6). A catalyst pile located on the Northwest Property area was also analyzed. XRF readings at each location were generally taken at the surface, 1-2 inches, 3-4 inches, and occasionally 6-inches, to obtain a vertical profile on the metal concentrations. Background inorganic concentrations were obtained from an analytical soil sample collected

from the Elizabeth Conkley Woods Forest Preserve located approximately 6-miles from the site.

This location was selected because it was in the opposite direction of the prevailing wind direction and was not expected to have been impacted by refinery operations.

Lead, arsenic, zinc, copper, nickel, chromium, cobalt, and barium were found at concentrations significantly above background at various locations throughout the sampling area. Chromium was the only compound found to exceed the residential SCDM benchmark of 230 ppm at various locations throughout the site (Table - 1). No RALs were exceeded in soil samples analyzed using the XRF. Lead was observed at one sample location at a concentration of 1169 ppm, which is above the residential and industrial/commercial cleanup guidance level of 400 ppm. This concentration of lead was isolated to this particular location and does not appear to be related to refinery activities.

A catalyst pile located on the Northwest Property was analyzed using the XRF. The catalyst contained elevated concentrations of nickel, iron, and molybdenum. Catalysts of varying composition were used at the refinery, some of which may contain elevated concentrations of other inorganic compounds. Although various metals were observed at concentrations significantly above background throughout the sampling area, it does not appear that these concentrations are related to spent catalyst releases from the refinery.

### **3.3.2 Sediment XRF Sample Results**

Sediment samples were collected at various locations from Mosquito Creek, Stony Creek, and the Cal Sag Channel for XRF analysis on October 16 & 17, 2001 (Figure - 7).



Sediment samples were oven dried prior to analysis using the XRF. National Wetlands Inventory maps (U.S. Department of the Interior, 1987) were used to classify surface water bodies near the site to evaluate sediment contaminant concentrations. Inorganic concentrations in Mosquito Creek were compared to background concentrations and soil SCDMs, since Mosquito Creek is classified as an intermittent stream. Stony Creek and the Cal Sag are classified as perennial streams, which may be compared to ecological benchmarks or thresholds such as the Ontario Sediment Benchmarks (Queen's Printer for Ontario, August 1993).

During the October 2001 investigation, sediment samples S-101 thru S-108 were collected from Mosquito Creek, Stony Creek and the Cal Sag Channel for analysis using the XRF instrument (Figure - 7). Table - 1 contains the XRF results for samples S-101 thru S-106. XRF reading for the two Cal Sag samples S-107 and S-108 are unavailable. Three sediment samples were collected from Mosquito Creek for XRF analysis. Lead and zinc were detected at concentrations greater than three times background levels at all three locations. Barium was present at three times the background concentration at S-105 and S-106. Molybdenum was present in S-105, but was not part of the background analysis. Molybdenum was present at elevated concentrations in the catalyst analyzed from the Northwest Property, which Mosquito Creek crosses.

Concentrations of metals greater than three times background did not exceed applicable soil SCDMs.

Two sediment samples were collected from Stony Creek for XRF analysis (Figure - 7). One sample was taken upgradient of the convergence of Mosquito Creek and Stony Creek. The other was collected just before the convergence of Stony Creek and the Cal Sag. Lead and zinc were

detected above background levels, but not greater than three times background. Metals were not detected at concentrations high enough to meet observed release criteria.

#### **4.0 SITE SOURCES**

This section includes descriptions of the various hazardous waste sources that have been identified at the Clark Blue Island Site. The HRS defines a “source” as: “Any area where a hazardous substance has been stored, disposed or placed, plus those soils that have become *contaminated through migration.*” In general, however, the volumes of air, groundwater, surface water, and surface water sediments that may have become contaminated through migration are not considered sources.

Information obtained during the CA has identified several potential sources of contamination at the refinery. These include, but are not limited to: Above ground Storage Tanks; other tanks or containers; contaminated soil; drums; waste piles; underground pipe lines; a storm water discharge into the Cal Sag; a burn area in the Northwest Property; and, process discharge stacks. Numerous chemical releases have been documented at the refinery over the course of its operation. These include chemical releases on the refinery property from tanks and containers, discharges to the Cal Sag and Mosquito Creek, spills into the Cal Sag, and spent catalyst releases *to the atmosphere from discharge stacks.*

##### **4.1 Specific Sources**

Investigation activities conducted during this CA were limited to offsite areas with the exception of the Northwest Property. A second phase of the CA was to include

investigation of the seven on site areas that make up the refinery property. Phase II of the CA was not performed by the Illinois EPA's Office of Site Evaluation. For that reason, the majority of potential sources could not be evaluated during this CA. The potential for impact from onsite sources can only be evaluated at this time. Specific sources of contamination that were investigated during the CA were spent catalyst releases and releases from onsite sources (spills) to the Cal Sag and Mosquito Creek. Samples could only be collected from areas potentially impacted to determine if an observed release could be established. The XRF was used to analyze a pile of catalyst dumped at the Northwest Property. The catalyst was found to contain lead, nickel, iron, molybdenum, and cadmium (Table - 1).

During refinery operation, spent catalyst has historically been released from the Fluid Catalytic Cracking (FCC) Unit. These releases cause spent catalyst to be released into the atmosphere from the FCC stack. The spent catalyst is a dust like material, which after discharge, settles to the ground over a large area around the refinery. Catalyst releases have been known to impact an area greater than a quarter of a mile to the northeast of the refinery. During the investigation, residents near the refinery reported that the released catalyst would accumulate on their vehicles, lawn furniture, and in their swimming pools, following a large release. One release forced the closure of the Eisenhower Public High School located just north of the refinery. Several students with respiratory conditions were hospitalized following the release.

A large portion of this phase of the CA was to determine if catalyst releases had spread hazardous materials to outlying areas beyond the refinery. Initial investigation activities consisted of measuring the concentration of metals in the near surface soil using XRF

technology. Laboratory analytical samples were collected from several of the XRF locations to confirm initial XRF results. Figures - 6 and 8, indicate the locations where XRF and laboratory samples were collected. The results of the investigation indicate that the catalyst releases have not elevated SVOC and metal concentrations in the soil around the refinery to levels that represent a threat to human health and the environment.

Spills and releases have occurred to the Cal Sag Channel and Mosquito Creek. Prior to construction of a wastewater treatment system, storm water from the refinery property was discharged to the Cal Sag. Spills and releases have occurred to a six-foot sewer that bisects the site before discharging to the Cal Sag. A product recovery system is currently active at the marine loading dock. The outfall of a drainage tile that appears to lead to the refinery was observed in Mosquito Creek at the time of the CA. The impact of releases to the Cal Sag and Mosquito Creek were evaluated by the collection of sediment and surface water samples. Sediment samples were collected for XRF analysis from Mosquito Creek, Stony Creek, and the Cal Sag on October 16 & 17, 2001. These samples were collected to obtain a preliminary indication if these waterways might have been impacted from catalyst releases, and or refinery activities involving metal constituents. Analytical sediment and surface water samples were collected from the three surface water bodies during the week of November 8, 2001. Samples were analyzed for the TCL of parameters. The results of the sampling are presented in Sections 3.2 and 3.3 of this report.

During sample collection, visual inspection of the sediment samples suggested that refinery operations might have impacted Mosquito Creek and the Cal Sag. Sediment sample X-207 was

collected from Mosquito Creek near a concrete tile outfall that appears to come from the refinery. A heavy sheen was noted in the water during collection of the sample. While attempting to collect a sediment sample from the Cal Sag near the former storm water discharge, a sheen was noted at the surface. Since only gravel could be retrieved, no sample was collected from that location. Bedrock was encountered in the marine loading dock area. It is unclear whether dredging has occurred in that area, or if barge traffic prevents sediments from accumulating in that area.

#### **4.2 Other Sources Not Investigated**

Information obtained during the Combined Assessment has identified several potential sources of contamination at the refinery. These include, but are not limited to: Above ground Storage Tanks; other tanks or containers; contaminated soil; drums; waste piles; underground pipe lines; a storm water discharge into the Cal Sag; a burn area in the Northwest Property; and, process discharge stacks. Since Premcor entered into a Consent Order for the investigation of the refinery property, the Illinois EPA's OSE did not conduct in depth onsite sampling. As a result, not all of these sources were investigated during the CA. Numerous chemical releases have been documented at the refinery over the course of its operation in many of these source areas. These include chemical releases on the refinery property from tanks and containers, discharges to the Cal Sag and Mosquito Creek, spills into the Cal Sag, and spent catalyst releases to the atmosphere from discharge stacks. Dumping of off specification resins, and spent catalyst were also reported to have occurred in the Northwest Property. Should the terms and conditions of the Consent Order not be met by Premcor, a second phase, or Expanded Site Investigation will be performed by the Illinois EPA's OSE.

## **5.0 MIGRATION PATHWAYS**

The Office of Site Evaluation identifies three migration pathways and one exposure pathway, as identified in CERCLA's HRS, by which hazardous substances may pose a threat to human health and/or the environment. Consequently, sites are evaluated on their known or potential impact to these pathways. The pathways evaluated are groundwater migration, surface water migration, soil exposure, and air migration.

### **5.1 Groundwater**

Section 2.1 of this report contains information regarding the regional geology of the area and the onsite geology at the Clark facility. The Illinois EPA did not perform soil borings on refinery property to classify subsurface materials above bedrock. Illinois EPA Bureau of Land (BOL) records indicate that the unconsolidated materials above bedrock on the refinery property consists of a mixture of fill, sand, silt, clay, peat, silty clay with numerous shells, and dense silty clay (Illinois EPA, BOL File). These materials vary in thickness, and presence, but appear to be approximately 15 feet in thickness. Boring logs from various areas of the refinery indicate that coarse grained materials may be present directly on top of the bedrock, suggesting that contaminants contained in the unconsolidated strata could potentially reach fractured bedrock.

Two water bearing aquifers are present in the Blue Island area, the Calumet aquifer and the Silurian-Devonian aquifer (Kay, *et. al.*, 1996). Groundwater has been encountered at three to four feet below grade. Since confining layers are not present throughout the entire site, a hydraulic connection between the Calumet aquifer and the Silurian-Devonian aquifer can be

expected. Groundwater flow within the Calumet aquifer is expected to be to the Cal Sag Channel and to a lesser degree to Mosquito Creek. Drinking water in the area is obtained from Lake Michigan.

Illinois EPA resources (Illinois EPA website) indicate that two community water supply wells were located within the 4-mile Target Distance Limit (TDL) of the site (Figure - 11). The Crestwood community water supply system is between two and three miles from the site and has 10,823 services connected. The Crestwood well is 345 feet deep. The Oak Forest system is inactive. There are roughly 23 non-community water supply wells located within the 4-mile TDL (Figure - 11). Illinois EPA resources indicate there are roughly 479 private water supply wells within the 4-mile TDL (Figure - 11). The number of active private wells within the 4-mile TDL is unknown. The Silurian-Devonian Aquifer would be relied upon the most for private and non-community water supply wells.

Based on information obtained from investigations of the refinery and records of chemical releases at the site, the uppermost Calumet Aquifer has been contaminated. Since the Calumet Aquifer is hydraulically connected with the Silurian-Devonian Aquifer, it may be suspected that the lower Silurian-Devonian Aquifer is at risk. The following table contains information regarding the population served by wells located in the TDL (Bureau of the Census, 2000).

## ESTIMATED GROUNDWATER TARGET POPULATION

Distance Category (miles)	Wells/Residences (individuals)	Total Population (individuals)
0 - ¼	11	30
¼ - ½	11	30
½ - 1	35	94
1 - 2	119	319
2 - 3	10,970	29,400
3 - 4	156	418

Target population calculated from the Cook County average household population of 2.68, as established by the U.S. Census Bureau, and Illinois EPA Source Water Assessment Fact Sheets.

### 5.2 Surface Water

The primary surface water bodies near the site are Mosquito Creek, Stony Creek, and the Cal Sag Channel (Figure - 4). Mosquito Creek is an intermittent stream, and Stony Creek and the Cal Sag are perennial waterways. Mosquito Creek enters the site at the western side of the Northwest Property. It runs west to east across the Northwest Property, leaves the site and crosses under the railroad tracks, then turns south and runs along the north side of the railroad tracks as it passes the Triangle Property, then crosses under Wireton Road, then discharges into Stony Creek. At one time, runoff from the Northwest Terminal discharged into Mosquito Creek. Sediment sample X-211 was collected from this location (Figure - 9). Pyrene, cadmium, lead, zinc, and several pesticides were detected at concentrations exceeding observed release criteria.

From sample location X-211 to X-209, where Mosquito Creek exists the Northwest Property, there is not much flow and stagnant pools are present. Sediment samples from this area



contained pyrene, benzo(b)fluoranthene, several metals, and several pesticides above observed release criteria. From the Northwest Property, Mosquito Creek crosses Homan Avenue and flows across the northern section of the ST Service tank farm and truck loading facility property until it reaches the railroad tracks. It crosses under the railroad tracks and flows southeast parallel to the rail spur. Sediment sample X-208 was collected from Mosquito Creek just before it crosses under the railroad tracks (Figure - 9). Sample X-208 contained the highest concentration of PAH's found in Mosquito Creek (Table - 2). Benzo(a)pyrene was detected at a concentration exceeding the U.S. EPA residential RAL of 8,800 ug/kg. Various metals and pesticides were also detected at concentrations above observed release criteria.

An outfall to Mosquito Creek was discovered during the CA near sample location X-207. The outfall crosses under the railroad tracks at a location along the Triangle Property where the majority of refinery operations occurred. The outfall appears to be coming from the refinery; however, that could not be confirmed during the CA. During collection of sediment sample X-207, a strong sheen was observed in the water. Various metals and 4,4'-DDT were detected at concentrations above observed release criteria. Mosquito Creek crosses Wireton Road and then discharges into Stony Creek. For HRS purposes, Mosquito Creek does not meet the classification criteria for surface water, but is considered part of the overland flow portion of the pathway discussion.

Stony Creek is a lower perennial surface water body that carries water from Mosquito Creek to the Cal Sag. The HRS Guidance manual describes the Probable Point of Entry (PPE) for the surface water pathway as the point at which the overland segment of a hazardous substance

*migration path intersects with surface water.* The first PPE for the surface water pathway is located where Mosquito Creek converges with Stony Creek (Figure - 13). This location was selected for the following reasons. Runoff from the Northwest Terminal discharged to Mosquito at one time. Spent catalyst, off-specification resins, and sulfur were reportedly dumped or buried in the Northwest Property that Mosquito Creek bisects. Since Mosquito Creek is an intermittent stream, it is considered part of the overland flow segment under HRS. PAH's, metals, and pesticides were detected in sediment samples from Stony Creek at concentrations above observed release criteria (Table - 5). PAH's are typically present as contaminants of concern at refineries. These compounds are expected to be present on the refinery property.

The convergence of Stony Creek and the Cal Sag is upstream of the site. A Palustrine forested wetland area exists for approximately 1000 feet along Stony Creek prior to the convergence with the Cal Sag (United States Department of the Interior, 1987). Various PAHs, metals, and pesticides were identified in sediment samples at concentrations above the observed release criteria in the forested wetland area (Table - 5, X-204 & X-205). The Cal Sag flows east to west and flows past the Clark property at the Southwest Terminal (Figure - 4). The marine loading dock is present at the Southwest Terminal. A six-foot diameter storm sewer that crosses the Clark property discharges to the Cal Sag. Chemical releases to the storm sewer have been documented. Prior to the installation of the wastewater treatment system, storm water from the site was discharged to the Cal Sag. Free-phase contamination has been documented in wells at the marine loading dock area. The second PPE is located in the Cal Sag at the point where the 6-foot storm sewer discharges to the Cal Sag (Figure - 13). Two pesticides were detected in sediment samples from the Cal Sag at concentrations above observed release criteria.

Chromium, chlorobenzene, and 1,4-Dichlorobenzene were detected in surface water samples from the Cal Sag at concentrations above observed release criteria (Table - 7). Fishing tackle was noted in branches of trees near the bank of the Cal Sag. For HRS purposes, the Cal Sag will be considered a fishery.

The HRS defines the TDL for a river under the surface water pathway as 15-miles from the Probable Point of Entry (PPE). Establishing the PPE as the storm sewer discharge to the Cal Sag, the TDL would continue to the Chicago Sanitary and Ship Canal/Des Plaines River just north of Lemont, Illinois (Figure - 12). There are no surface water intakes located within the TDL; however, the Cal Sag does border the Well Head Protection Area for the Crestwood community water supply well within the TDL. Sensitive environments have been located within the 15-mile TDL (United States Department of the Interior, 1987). Outside of the forested wetland at the convergence of Stony Creek and the Cal Sag, no samples have been collected from the other sensitive environments located adjacent to the Cal Sag.

### **5.3 Soil Exposure**

Surface and near surface soil at residential and recreational properties near the Clark refinery were analyzed using XRF technology and laboratory analysis to determine if spent catalyst releases from the refinery had impacted these areas to a level significantly above background ( $> 3X$  background). The results of the investigation suggest that this has not occurred. Only offsite soil was analyzed during the CA. Soil samples from investigations conducted for Clark Oil and/or Premcor indicate that soil contamination exists on the refinery property (Illinois EPA, BOL File). Elevated BTEX (Benzene, Ethylbenzene, Toluene, and Xylenes) concentrations

have been observed at the Northwest Terminal and Southwest Terminal. Only onsite workers represent targets under the soil exposure pathway for this site. Residents within 1-mile may be used to estimate a nearby population threat score under the HRS. Nearby population estimates generated using U.S Census information are presented in the following table (Bureau of the Census, 2000).

#### ESTIMATED NEARBY POPULATION

Distance Category (miles)	Total Population (individuals)
0 - 1/4	1115
1/4 - 1/2	3377
1/2 - 1	13361

Estimated nearby population calculated from the Cook County population density of 5,685.6 people/sq. mile, as established by the U.S. Census Bureau (Bureau of the Census, 2000).

#### 5.4 Air Route

During refinery operation, spent catalyst has historically been released from the Fluid Catalytic Cracking (FCC) Unit. These releases cause spent catalyst to be released into the atmosphere from the FCC stack. The spent catalyst is a dust like material, which after discharge, settles to the ground over a large area around the refinery. Catalyst releases have been known to impact an area greater than a quarter of a mile to the northeast of the refinery. During the investigation, residents near the refinery reported that the released catalyst would accumulate on their vehicles, lawn furniture, and in their swimming pools, following a large release. One release forced the closure of the Eisenhower Public High School located just north of the refinery. Several students with respiratory conditions were hospitalized following the release. No formal air samples were collected during the Combined Assessment activities; however, an observed release may be established by direct observation. A demonstrated adverse effect, such

as the hospitalization of high school students, may be used to establish an observed release. For this CA, the air pathway will be scored for the potential to release since no air samples were collected during the CA.

During the CA, surface and near surface soil from areas surrounding the refinery were analyzed using XRF technology at 43 locations. Following XRF analysis an additional 22 soil samples from previously analyzed areas were sent to an analytical laboratory for SVOC and inorganic analysis. Various metals and SVOCs were detected in soil samples at concentrations meeting observed release criteria (Table - 6). Four samples were found to exceed the benzo(a)pyrene SCDM of 0.088 ug/kg at four locations (Table 6, and Figure 8). No removal action levels were exceeded. Twelve (12) metals were detected in the soil samples at concentrations above the observed release criteria (Table - 6). All of these compounds can be naturally occurring. None of the Key Samples were found to exceed SCDMs or RALs. This does not indicate that the catalyst releases have not impacted near surface soil at areas surrounding the refinery; however, the concentration of metals observed does not represent a threat to human health or the environment.

Based on U.S. Census Bureau information regarding the population density of Cook County, an estimated 285,759 people reside within a four-mile radius of the site. The compounds of concern potentially present at the refinery property are VOCs, SVOCs, and metals, which represent gaseous and particulate hazardous substances. The greatest risk would occur to the worker population within the source areas where contamination is present, or where releases have

occurred. The following table contains the population potentially exposed to air-borne contamination (Bureau of the Census, 2000).

#### **POPULATION POTENTIALLY EXPOSED TO AIR-BORNE CONTAMINATION**

<b>Distance (Miles)</b>	<b>Population</b>
0 – 1/4	1,115
1/4 - 1/2	3,377
1/2 - 1	13,361
1 -2	53,615
2 -3	89,264
3-4	125,027

Estimated nearby population calculated from the Cook County population density of 5,685.6 people/sq. mile, as established by the U.S. Census Bureau.

#### **6.0 Additional Risk-Based Objectives**

For purposes of assessing potential impacts to surface water bodies, chemical compounds are frequently compared to Sediment Quality Guidelines to determine if toxic chemicals from industrial, municipal, or non-point sources have accumulated in bottom sediments at concentrations that are a threat to the survival of bottom dwelling (benthic) organisms and their consumers. This Section contains a comparison of compounds detected in Stony Creek and the Cal Sag Channel to concentrations outlined in the Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario (Queen's Printer for Ontario, August 1993).

Ontario Sediment Guidelines are divided into to levels. Contamination above the Lowest Effect Level will affect sediment use by some benthic organisms. The sediment would be considered

marginally to significantly contaminated. Contamination in sediment that exceeds the Lowest Effect Level may require further testing and a management plan. Sediment samples exceeding the Severe Effect Level are considered heavily contaminated and likely to affect the health of sediment-dwelling organisms. Contamination above the Severe Effect Level is said to require additional testing to determine whether the sediment is acutely toxic. Severe Effect Level guideline values are to be converted to bulk sediment values by multiplying the Severe Effect Level by the actual Total Organic Carbon (TOC) concentration of the sediment (to a maximum of 10%). It is not known what the TOC value of the sediment samples were at that time of the CA, so the Severe Effect Level was not adjusted.

Ten PAHs were detected above the Lowest Effect Level in the background sample from the Cal Sag (Table - 8). These PAHs were not detected in the downstream samples at concentrations above observed release criteria, indicating they may originate from another upstream source. Ten PAHs were detected in Stony creek at concentrations above observed release criteria, and the Lowest Effect Levels for those compounds. PAHs are attributable to the site. Two pesticides, beta-BHC and Endrin were detected in downgradient samples from the Cal Sag at concentrations above observed release criteria and the Lowest Effect Level for those compounds (Table - 8). Dieldrin, endrin, and alpha-chlordane exceeded observed release criteria and the Lowest Effect Level for those compounds. Only Stony Creek contained metals above observed release criteria and the Lowest Effect Level benchmarks. These compounds were cadmium, copper, lead, mercury, and zinc (Table - 8). Zinc was detected at elevated concentrations in the XRF sample of the spent catalyst found in the Northwest Property.

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# FIGURES

**Figure 1**  
**Site Location Map**

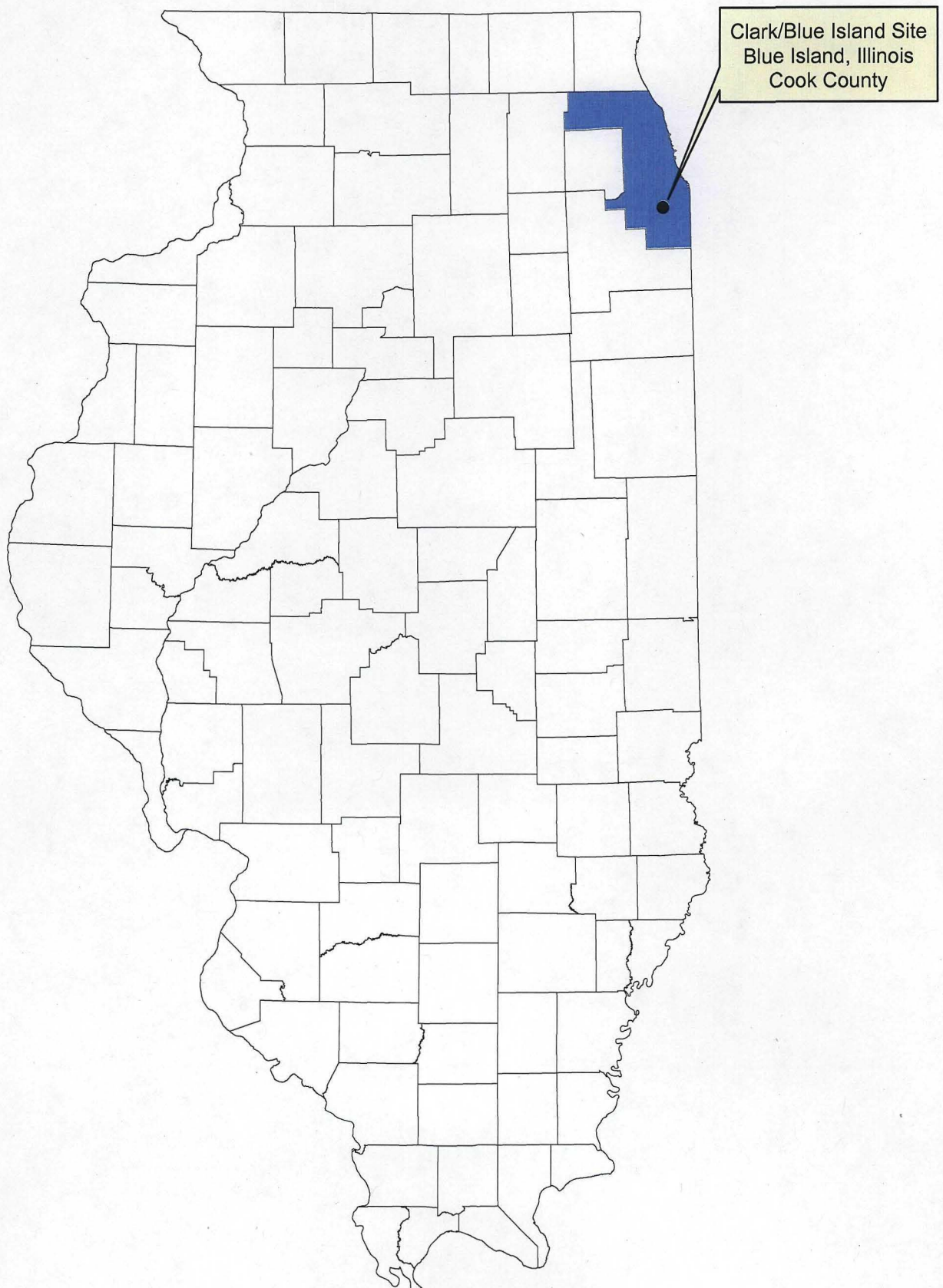
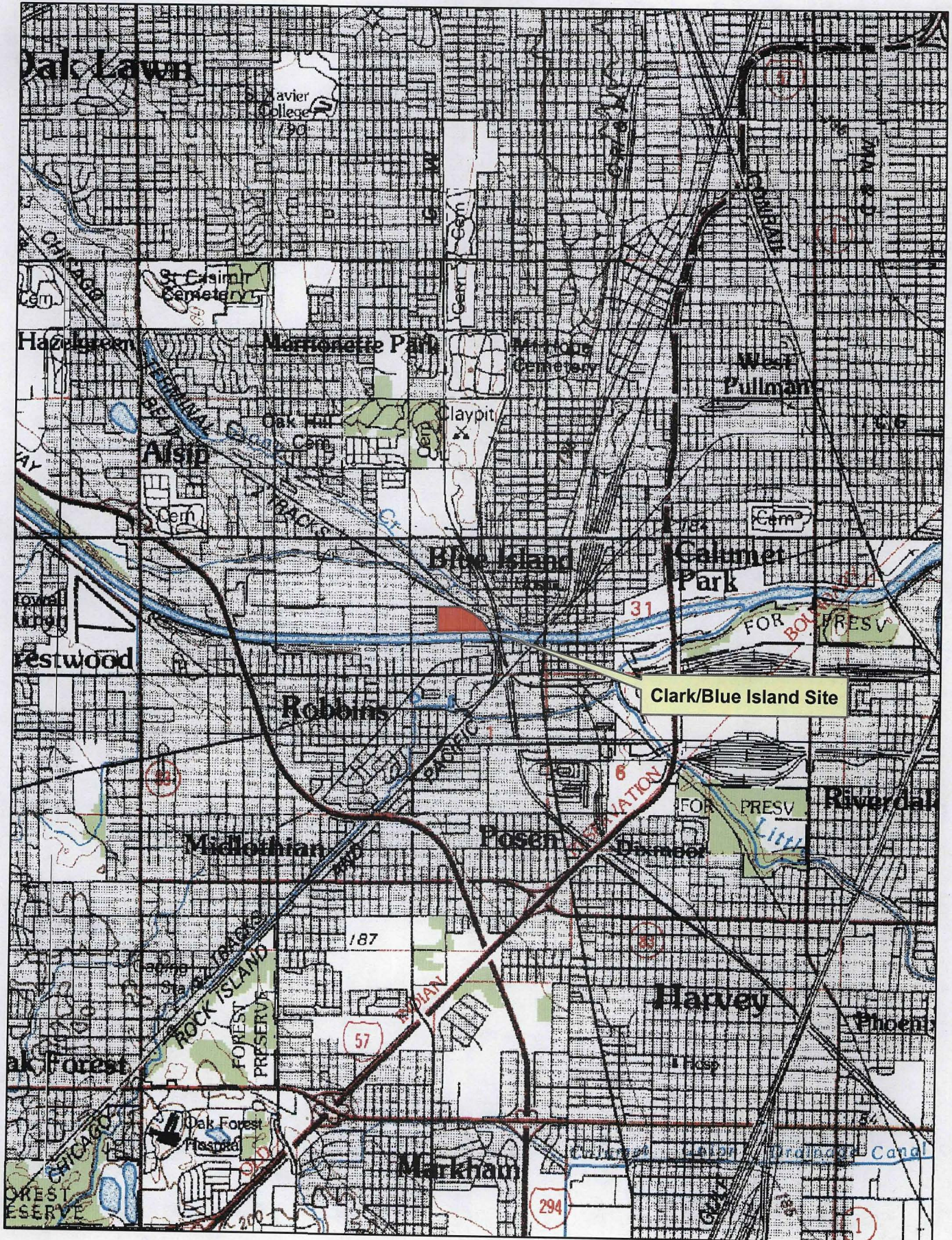




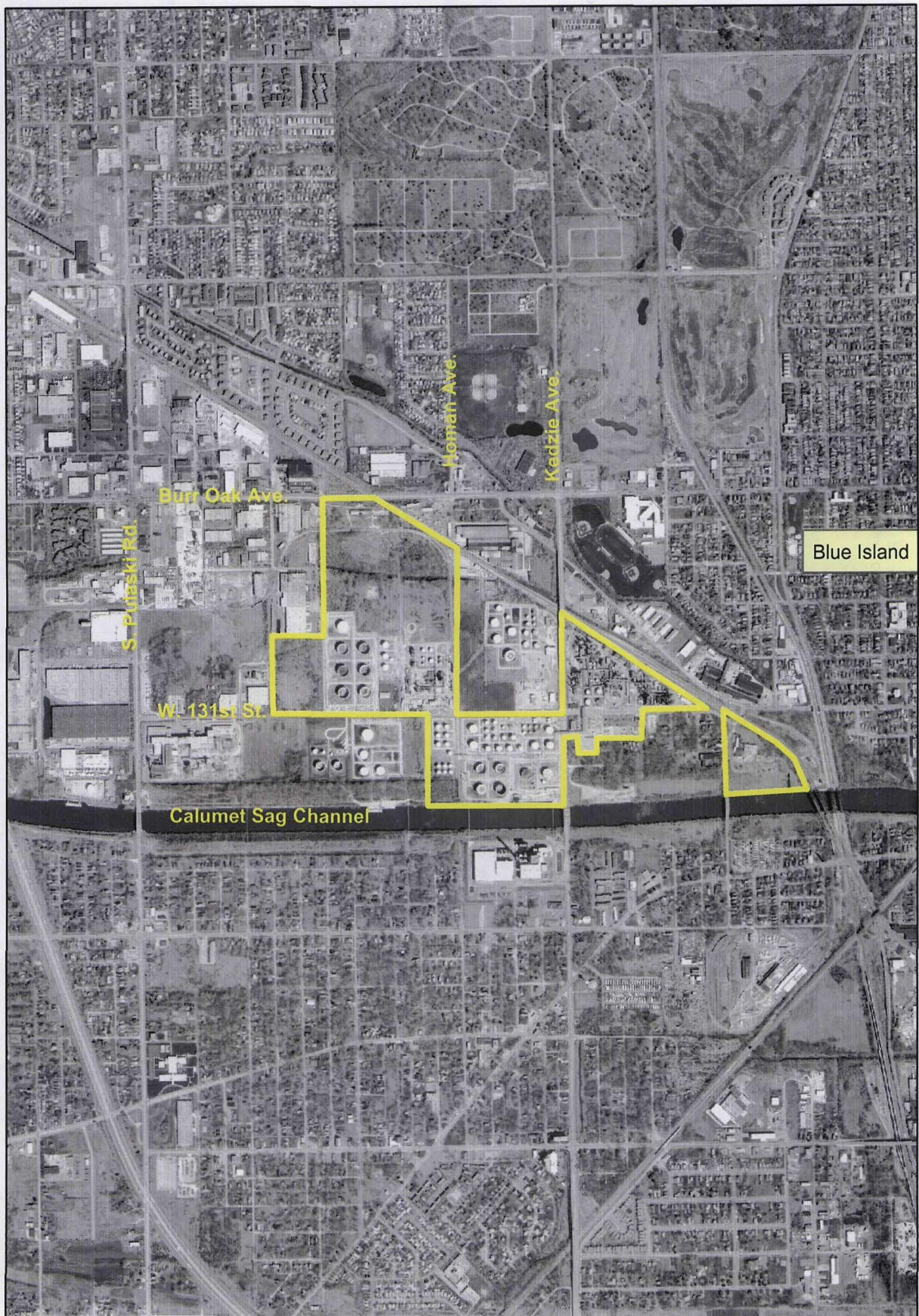
Figure - 2  
Site Location Map



0 0.5 1 2 Miles



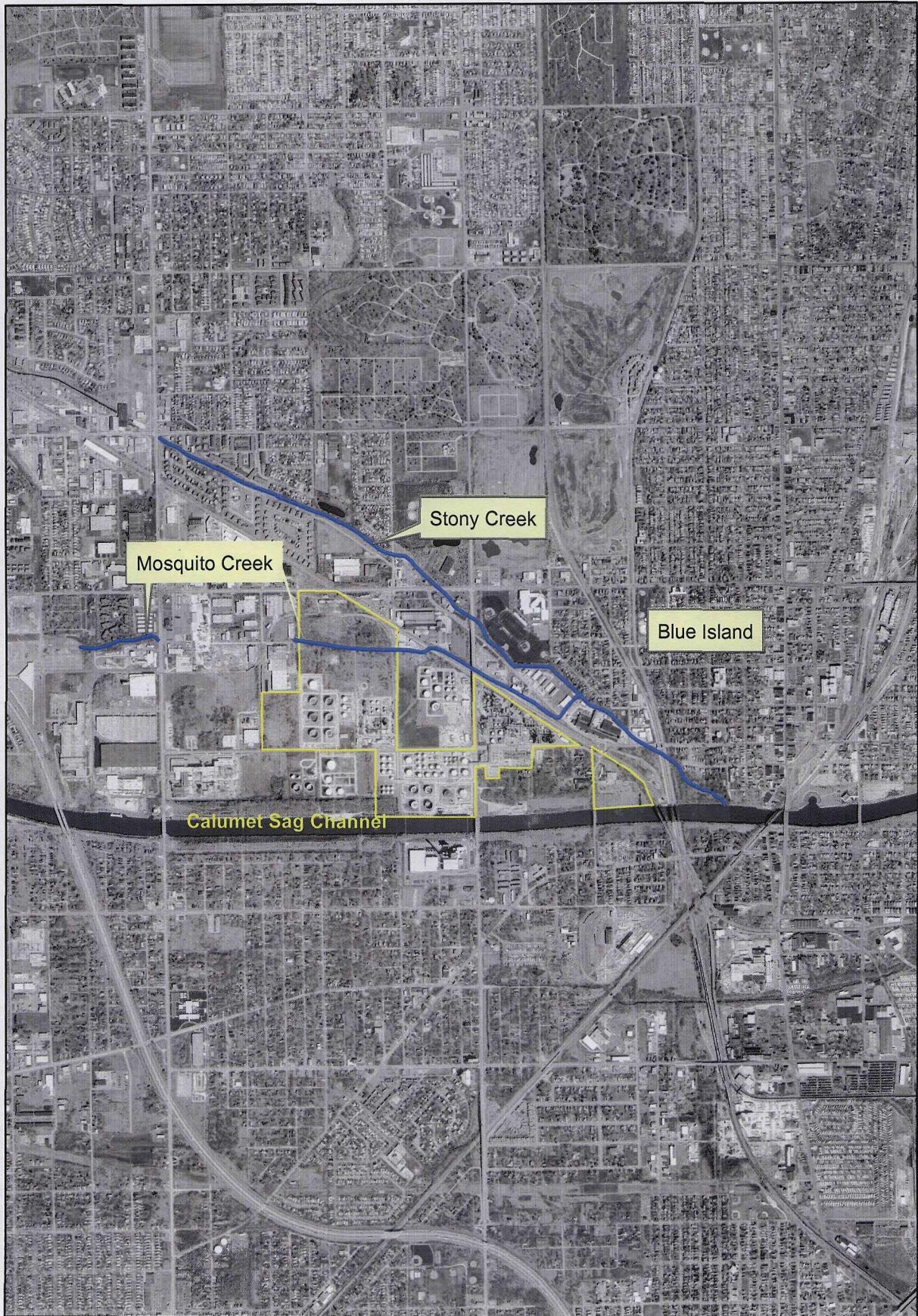
Figure - 3  
Site Location Map



0 0.2 0.4 0.8 Miles



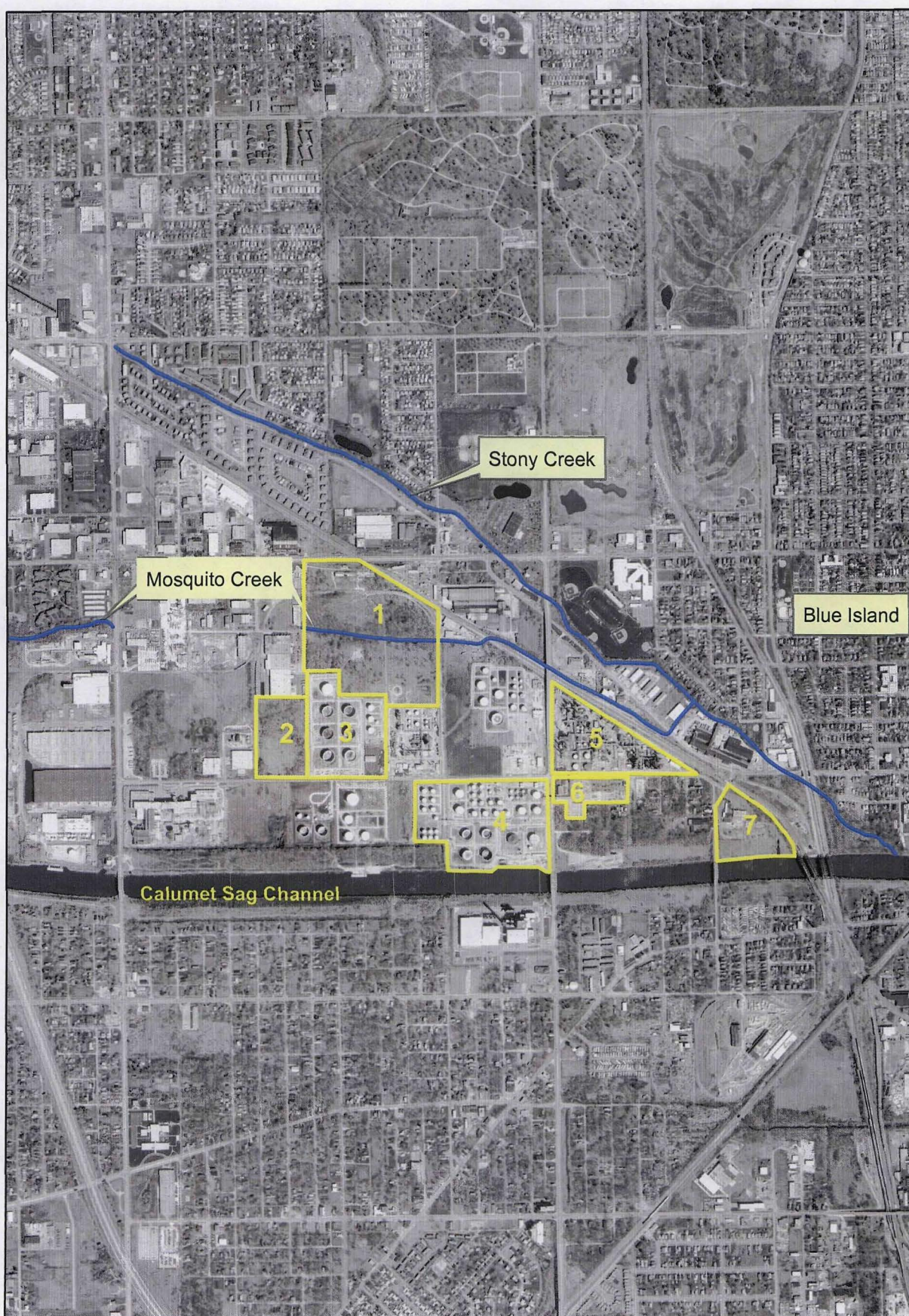
Figure - 4  
Surface Water Map



0 0.3 0.6 1.2 Miles

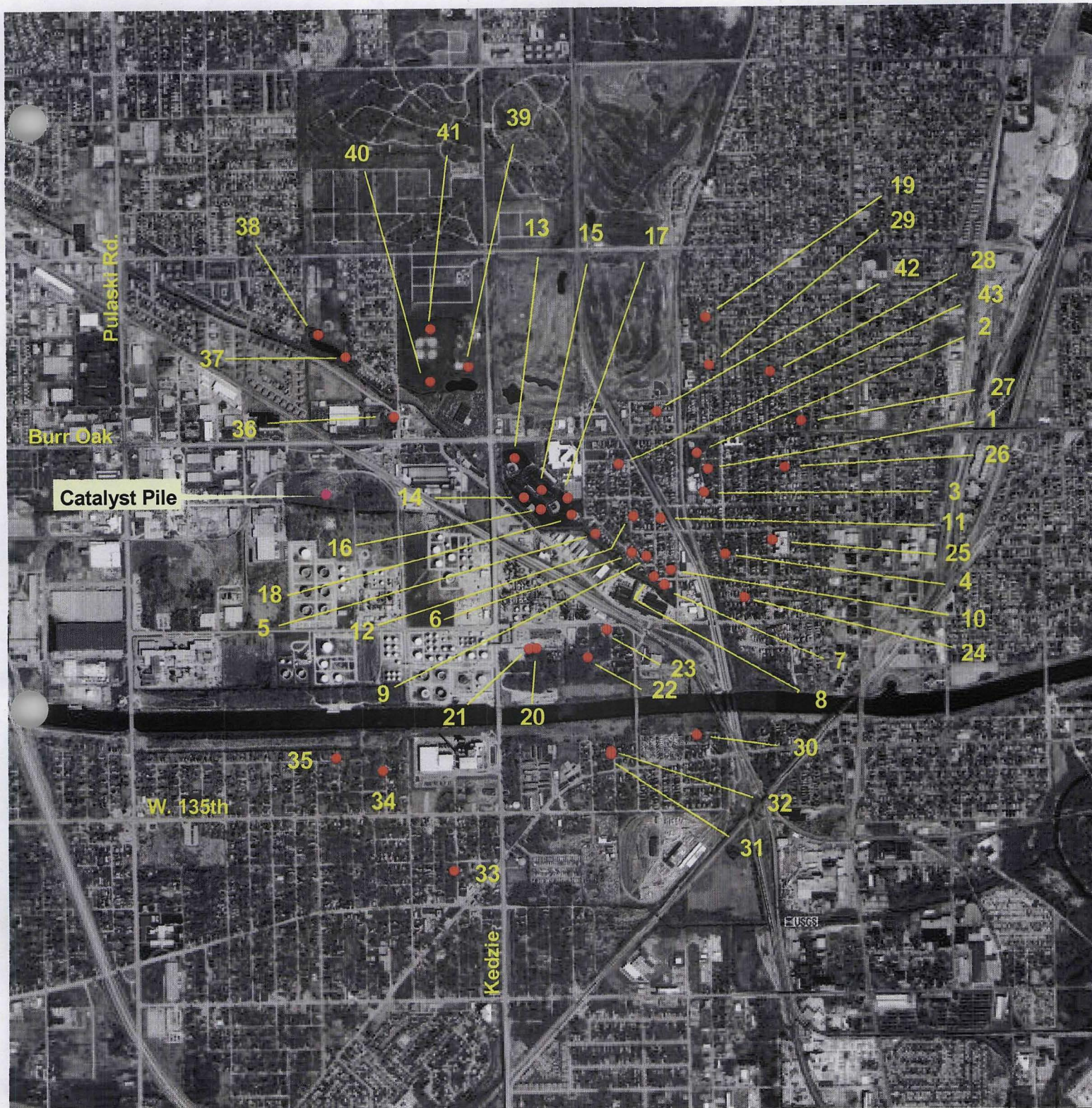


Figure - 5  
Property Division Map



0 0.15 0.3 0.6 Miles





**Figure - 6**  
**Clark/Blue Island**  
**October 2001 XRF Locations**

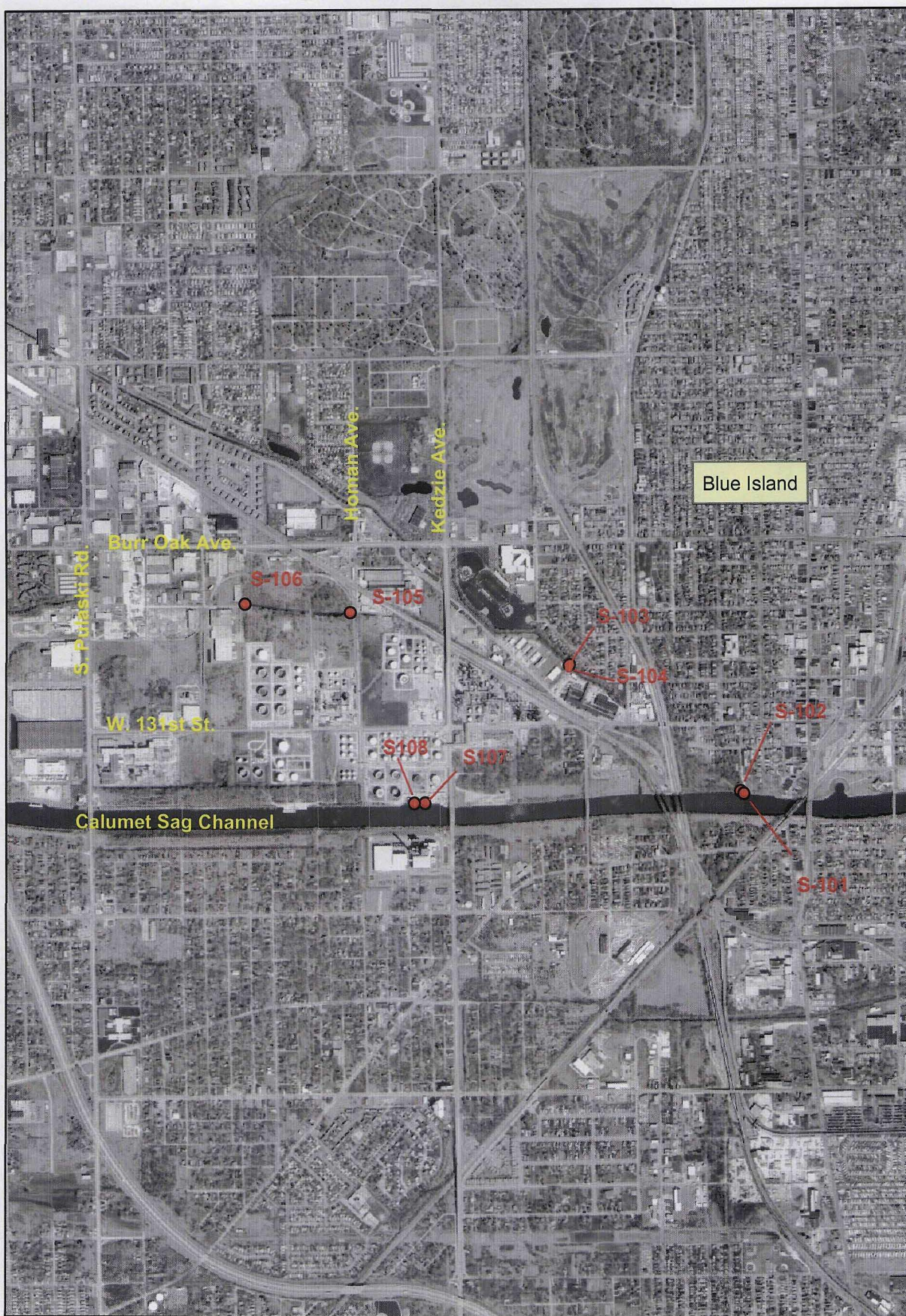
● XRF Location

● Catalyst Pile

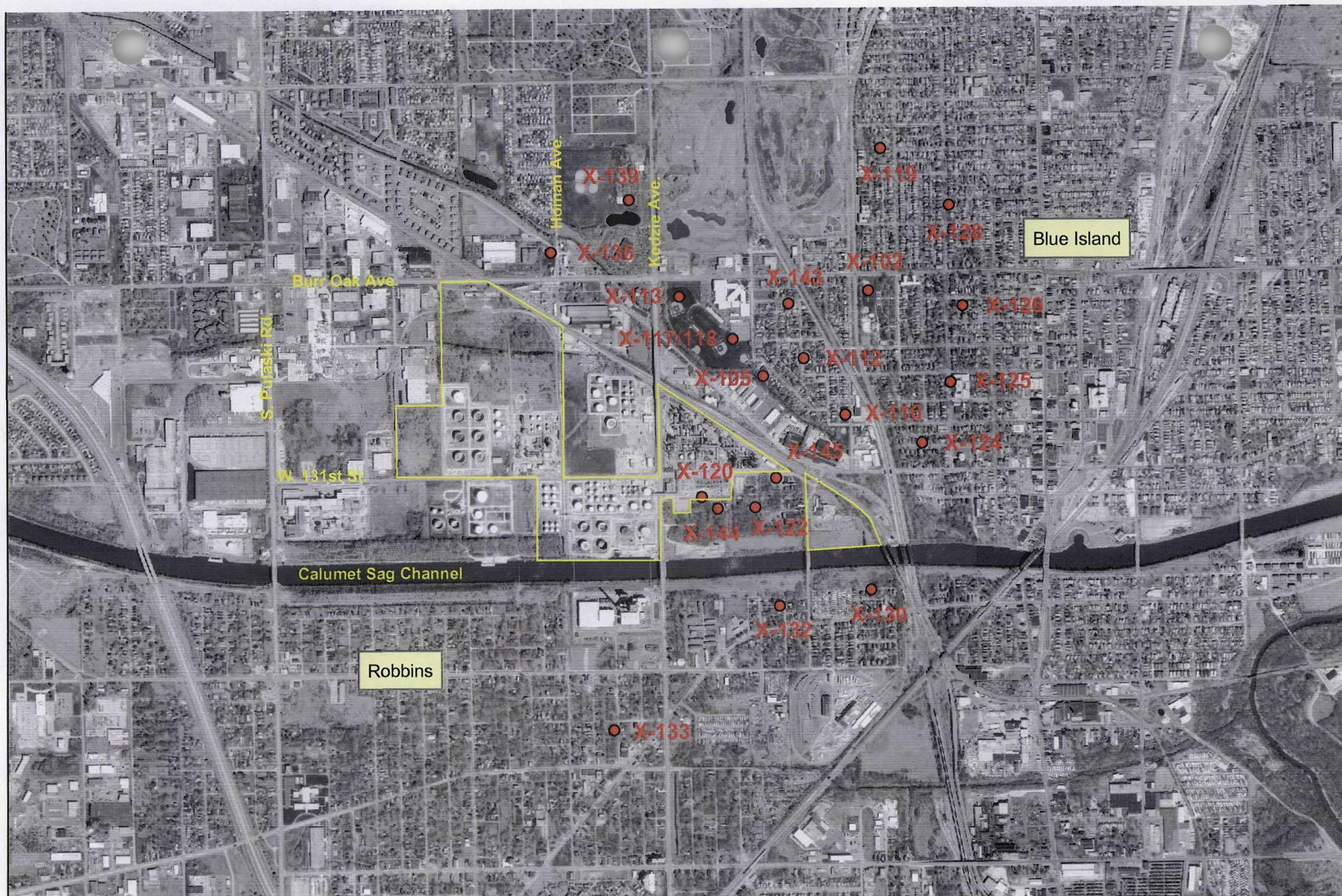
2000 0 2000 4000 Feet



Figure - 7  
XRF Sediment Sample Locations







**Figure - 8**  
**Soil Sampling Locations**  
**Clark/Blue Island**  
**November 2001**



0 0.125 0.25 0.5 Miles





**Figure - 9**  
**Clark/Blue Island**  
**November 2001 Stream**  
**and Sediment Sample Locations**

- Sample Location
- X-201** Sediment Sample
- S-102** Surface Water Sample



1000 0 1000 2000 Feet



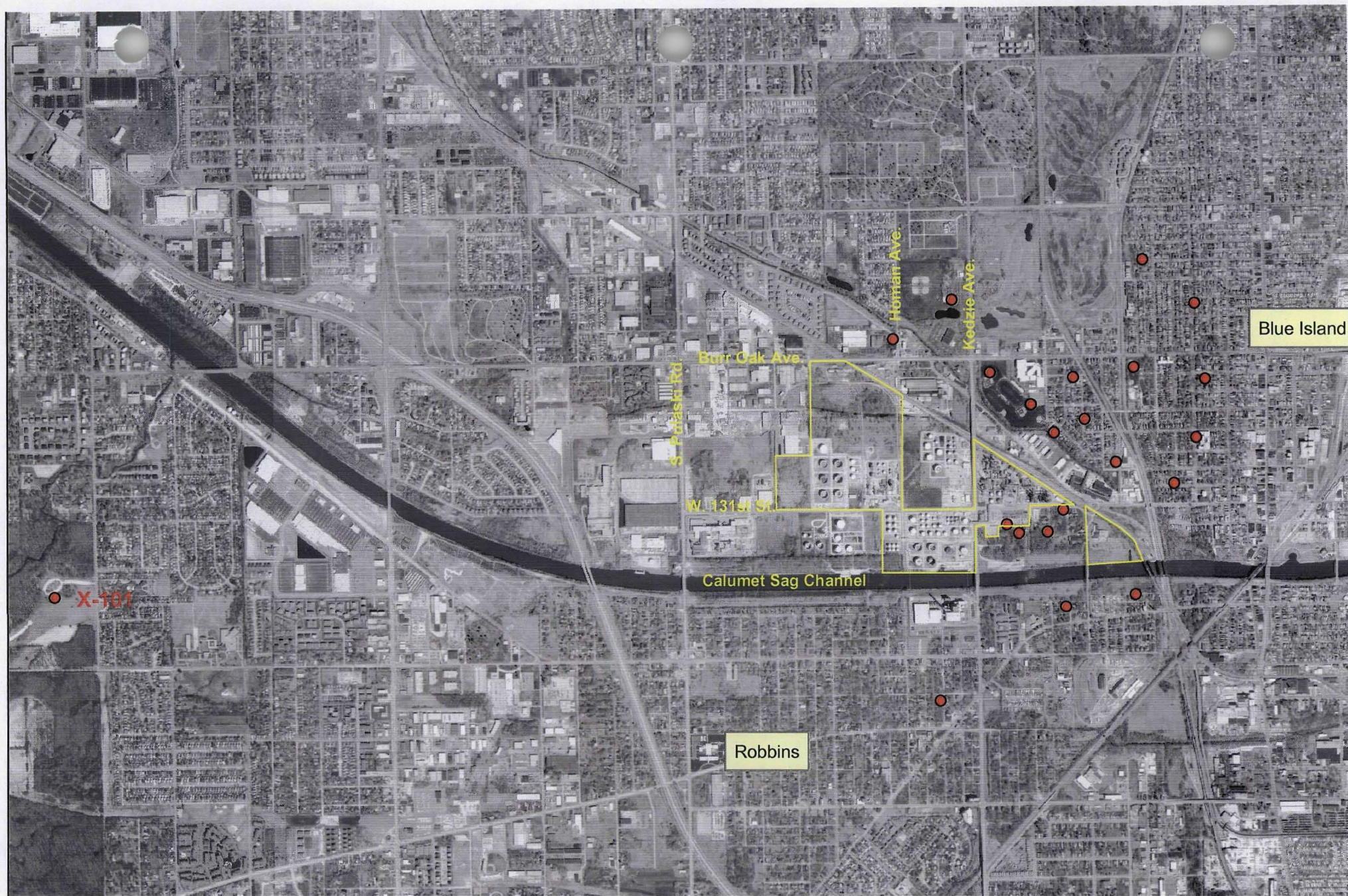


Figure - 10  
Background Soil Sampling Location  
Clark/Blue Island  
November 2001



0 0.25 0.5 1 Miles











Figure - 13  
PPE and Wetland Map  
Clark/Blue Island



0 0.25 0.5 1 Miles



# TABLES

**TABLE - 1**  
**CLARK/BLUE ISLAND**  
**OCTOBER 2001 XRF DATA**

Description	Depth	XLNo	Date/Time	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Cr	Cr Error	Ba	Ba Error	Mo	Mo Error
Location No. 1 Memorial Park Blue Island Park Dist.	Surface	270	10/16/2001 9:28	54.9	24.1	<LOD	29.4	72.5	46	<LOD	109.05	<LOD	195	10099.2	710	827.2	350	NA		17.7	9
	Surface	271	10/16/2001 9:31	NA		NA		NA		NA		NA		NA		NA		326.4	78.9	NA	
	1"-2"	272	10/16/2001 9:33	51.7	25.2	<LOD	34.05	110.6	53.1	<LOD	114	<LOD	210	9267.2	730	<LOD	480	NA		<LOD	13.8
	3"-4"	273	10/16/2001 9:35	NA		NA		NA		NA		NA		NA		NA		389	100	NA	
	3"-4"	274	10/16/2001 9:37	<LOD	29.7	<LOD	26.7	122.9	48.1	<LOD	101.55	<LOD	180	9996.8	670	<LOD	390	NA		<LOD	11.7
	1"-2"	275	10/16/2001 9:38	NA		NA		NA		NA		NA		NA		NA		460.8	140	NA	
Location No. 2 Memorial Park Blue Island Park Dist.	Surface	276	10/16/2001 9:42	NA		NA		NA		NA		NA		NA		NA		327	76.9	NA	
	Surface	277	10/16/2001 9:43	60.6	20.7	<LOD	27.3	183.2	47.7	<LOD	98.7	<LOD	165	12096	650	<LOD	360	NA		<LOD	10.5
	1"-2"	278	10/16/2001 9:45	68.8	26.4	<LOD	35.25	228.6	62.6	<LOD	128.55	<LOD	210	14400	869.6	610.4	340	NA		<LOD	13.2
	1"-2"	279	10/16/2001 9:46	NA		NA		NA		NA		NA		NA		NA		420.4	110	NA	
	3"-4"	280	10/16/2001 9:47	93.4	30.5	<LOD	39.9	175.2	59.9	<LOD	131.25	<LOD	240	13990.4	889.6	<LOD	510	NA		17.1	9.6
	3"-4"	281	10/16/2001 9:50	44.2	27.2	52.3	27.3	185	64.4	<LOD	132	<LOD	240	16396.8	1000	<LOD	525	NA		<LOD	15.15
Location No. 3 Memorial Park Blue Island Park Dist.	Surface	282	10/16/2001 9:57	<LOD	29.1	<LOD	25.95	133.6	48.7	<LOD	100.2	<LOD	180	10995.2	700	<LOD	420	NA		<LOD	12
	Surface	283	10/16/2001 9:59	NA		NA		NA		NA		NA		NA		NA		279.2	89.1	NA	
	1"-2"	284	10/16/2001 10:00	<LOD	33.45	<LOD	30.6	121.4	54.9	<LOD	130.5	<LOD	225	12396.8	820	590.4	330	NA		<LOD	14.1
	3"-4"	285	10/16/2001 10:02	58.1	28	<LOD	37.35	120.9	59.7	<LOD	138.45	<LOD	225	12198.4	889.6	<LOD	465	NA		<LOD	14.85
	1"-2"	286	10/16/2001 10:27	NA		NA		NA		NA		NA		NA		NA		NA		NA	
	3"-4"	287	10/16/2001 10:28	39.4	23.9	<LOD	32.7	82.8	51.8	<LOD	127.35	<LOD	225	10694.4	790	720.4	390	NA		<LOD	13.65
Location No. 4	Surface	288	10/16/2001 10:31	NA		NA		NA		NA		NA		NA		NA		174.8	72.8	NA	
	1"-2"	289	10/16/2001 10:32	44.6	24.4	<LOD	26.25	92.1	51.2	<LOD	114.45	<LOD	210	9555.2	740	<LOD	435	NA		<LOD	13.8
	1"-2"	290	10/16/2001 10:34	NA		NA		NA		NA		NA		NA		NA		195.5	83.4	NA	
	3"-4"	291	10/16/2001 10:35	<LOD	33.6	<LOD	31.95	96.8	56.4	<LOD	128.4	<LOD	225	12800	909.6	<LOD	540	NA		<LOD	14.55
Location No. 5	Surface	292	10/16/2001 11:12	130.1	32.6	<LOD	39.45	258.2	65.6	<LOD	131.25	<LOD	240	16192	940	<LOD	495	NA		<LOD	12.9
	Surface	293	10/16/2001 11:13	NA		NA		NA		NA		NA		NA		NA		223.2	86.5	NA	
	1"-2"	294	10/16/2001 11:14	153.4	37.7	<LOD	44.7	201.5	66.8	<LOD	145.2	<LOD	240	14899.2	969.6	<LOD	510	NA		<LOD	14.25
	1"-2"	295	10/16/2001 11:16	NA		NA		NA		NA		NA		NA		NA		263	93.3	NA	
	3"-4"	296	10/16/2001 11:17	124.3	37.1	<LOD	45.6	164.1	66.7	<LOD	147.3	<LOD	255	15590.4	1100	<LOD	555	NA		<LOD	15.15
Location No. 6	Surface	297	10/16/2001 11:28	60.7	26.8	<LOD	33.6	128.1	54.9	<LOD	116.4	<LOD	195	9427.2	750	<LOD	420	NA		<LOD	13.5
	Surface	298	10/16/2001 11:30	NA		NA		NA		NA		NA		NA		NA		253.4	100	NA	
	1"-2"	299	10/16/2001 11:31	46.5	26.3	<LOD	37.2	117.8	57.2	<LOD	122.7	<LOD	210	10598.4	840	<LOD	480	NA		<LOD	14.7
	3"-4"	300	10/16/2001 11:34	62.5	23.5	<LOD	29.85	160.5	51.8	<LOD	112.95	<LOD	195	11699.2	720	<LOD	390	NA		<LOD	11.7
Location No. 7 York St. Park BI Park District	Surface	301	10/16/2001 11:47	<LOD	41.85	<LOD	37.95	<LOD	94.8	<LOD	150	<LOD	270	11200	969.6	<LOD	585	NA		<LOD	16.05
	Surface	302	10/16/2001 11:48	NA		NA		NA		NA		NA		NA		NA		162.4	85.3	NA	
	1"-2"	303	10/16/2001 11:49	NA		NA		NA		NA		NA		NA		NA		166.2	84.1	NA	
	1"-2"	304	10/16/2001 11:50	71.5	28.2	<LOD	35.1	135.5	57.6	<LOD	128.25	<LOD	225	13094.4	889.6	<LOD	480	NA		<LOD	13.95
	3"-4"	305	10/16/2001 11:53	<LOD	44.4	<LOD	36.3	92.2	61.3	<LOD	138.75	<LOD	285	14489.6	1100	<LOD	600	NA		<LOD	15.6
Location No. 8	Surface	306	10/16/2001 12:11	38.2	24.7	<LOD	31.05	116.2	58.2	<LOD	126.75	<LOD	240	11699.2	880	<LOD	495	NA		<LOD	14.4
	Surface	307	10/16/2001 12:13	NA		NA		NA		NA		NA		NA		NA		337.6	110	NA	
	1"-2"	308	10/16/2001 12:14	43.3	22.4	<LOD	30.45	120.5	49.2	<LOD	109.95	<LOD	195	13299.2	790	<LOD	435	NA		<LOD	12.45
	3"-4"	309	10/16/2001 12:16	85	30.1	<LOD	36.3	93.2	53.7	<LOD	127.8	<LOD	225	13388.8	889.6	<LOD	450	NA		<LOD	14.55
Location No. 9	Surface	310	10/16/2001 12:38	106.4	32.3	<LOD	38.85	173.7	60.5	<LOD	125.7	<LOD	210	12800	860	<LOD	435	NA		<LOD	13.65
	Surface	311	10/16/2001 12:39	NA		NA		NA		NA		NA		NA		NA		296	94	NA	
	1"-2"	312	10/16/2001 12:40	115.7	34.6	<LOD	42.9	213	68	<LOD	136.95	<LOD	240	15795.2	1000	<LOD	540	NA		<LOD	15.15
	1"-2"	313	10/16/2001 12:42	NA		NA		NA		NA		NA		NA		NA		367.6	120	NA	



**TABLE - 1**  
**CLARK/BLEU ISLAND**  
**OCTOBER 2001 XRF DATA**

Description	Depth	XLNo	Date/Time	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Cr	Cr Error	Ba	Ba Error	Mo	Mo Error
	3"-4"	314	10/16/2001 12:44	104.1	32.1	<LOD	39.3	157.2	59.7	<LOD	128.7	<LOD	225	12998.4	880	<LOD	525	NA		<LOD	14.1
Location No. 10	Surface	315	10/16/2001 12:54	147.6	37.8	<LOD	46.2	94.2	55.9	<LOD	136.8	<LOD	300	21696	1200	<LOD	630	NA		21	10.4
	Surface	316	10/16/2001 12:55	NA		NA		NA		NA		NA		NA		NA		285.6	110	NA	
	1"-2"	317	10/16/2001 12:56	152.8	34.7	<LOD	38.4	109	52	<LOD	116.55	<LOD	225	19993.6	1100	<LOD	510	NA		<LOD	12.9
	3"-4"	318	10/16/2001 12:57	81.7	33.8	<LOD	43.2	135.2	64.7	<LOD	146.85	<LOD	285	21990.4	1300	<LOD	615	NA		<LOD	15.6
Location No. 11	Surface	319	10/16/2001 13:08	57.8	14.8	<LOD	18.9	109.4	30.2	<LOD	66.6	<LOD	117	9996.8	430	<LOD	255	NA		<LOD	7.65
	Surface	320	10/16/2001 13:10	NA		NA		NA		NA		NA		NA		NA		293.2	57.8	NA	
	1"-2"	321	10/16/2001 13:11	57.8	26.8	<LOD	33.45	<LOD	71.55	<LOD	112.35	<LOD	195	10400	770	<LOD	435	NA		<LOD	13.8
	3"-4"	322	10/16/2001 13:12	54.7	30.6	<LOD	41.55	155.1	66.8	<LOD	137.7	<LOD	255	11296	920	<LOD	600	NA		18.5	11.7
Location No. 12	Surface	323	10/16/2001 13:21	50.1	25.6	<LOD	34.8	88.9	52.3	<LOD	112.65	<LOD	195	10694.4	820	<LOD	420	NA		<LOD	14.1
	Surface	324	10/16/2001 13:23	NA		NA		NA		NA		NA		NA		NA		179.7	93.7	NA	
	1"-2"	325	10/16/2001 13:23	46.5	23	<LOD	28.95	93.2	48	<LOD	107.25	<LOD	195	10099.2	720	<LOD	420	NA		<LOD	12.6
	3"-4"	326	10/16/2001 13:24	39	23	<LOD	27.9	113.5	52.7	<LOD	117.75	<LOD	195	11596.8	800	<LOD	465	NA		<LOD	13.2
Location No. 13 D.D. Eisenhower HS (See other sheet)	Surface	327	10/16/2001 13:55	45.6	13.8	<LOD	16.8	93.4	29.1	<LOD	65.85	<LOD	117.45	9600	420	<LOD	255	NA		8	5
	Surface	328	10/16/2001 13:56	NA		NA		NA		NA		NA		NA		NA		162.5	48.5	NA	
	1"-2"	329	10/16/2001 13:57	37.8	13.4	<LOD	17.25	101.6	30.1	<LOD	67.95	<LOD	121.65	10995.2	460	<LOD	255	NA		<LOD	7.8
	3"-4"	330	10/16/2001 14:00	48.4	24.1	<LOD	29.25	98	48.4	<LOD	106.5	<LOD	195	12294.4	780	<LOD	420	NA		<LOD	13.05
Location No. 14 D.D. Eisenhower HS (See other sheet)	Surface	331	10/16/2001 14:05	50.6	16.3	<LOD	20.1	94.4	33.1	<LOD	75	<LOD	138.9	11494.4	520	<LOD	270	NA		9.1	5.9
	Surface	332	10/16/2001 14:07	NA		NA		NA		NA		NA		NA		NA		217.4	59.5	NA	
	1"-2"	333	10/16/2001 14:08	49.1	14.8	<LOD	18	131.6	33.1	<LOD	72.15	<LOD	132.6	12998.4	510	<LOD	285	NA		<LOD	8.1
	1"-2"	334	10/16/2001 14:09	NA		NA		NA		NA		NA		NA		NA		271.4	92.3	NA	
	3"-4"	335	10/16/2001 14:10	41.3	23.2	<LOD	30.9	<LOD	68.1	<LOD	110.1	<LOD	210	12998.4	829.6	<LOD	480	NA		<LOD	12.75
Location No. 15 D.D. Eisenhower HS (See other sheet)	Surface	336	10/16/2001 14:17	37.6	12.1	<LOD	14.7	97.4	26.9	<LOD	60.3	<LOD	106.65	10496	410	<LOD	225	NA		<LOD	6.9
	Surface	337	10/16/2001 14:19	NA		NA		NA		NA		NA		NA		NA		241.6	54.8	NA	
	1"-2"	338	10/16/2001 14:19	43.1	23.4	<LOD	27.6	<LOD	67.35	<LOD	109.35	<LOD	210	11494.4	790	<LOD	465	NA		<LOD	12.45
	1"-2"	339	10/16/2001 14:20	NA		NA		NA		NA		NA		NA		NA		244.2	100	NA	
	3"-4"	340	10/16/2001 14:21	<LOD	36.75	<LOD	30.45	98.3	54.1	<LOD	124.65	<LOD	225	12800	900	<LOD	510	NA		<LOD	14.25
Location No. 16 D.D. Eisenhower HS (See other sheet)	Surface	341	10/16/2001 14:27	28.6	13.4	<LOD	17.55	91.8	31.2	<LOD	73.8	<LOD	131.25	12294.4	500	<LOD	300	NA		<LOD	7.8
	Surface	342	10/16/2001 14:29	NA		NA		NA		NA		NA		NA		NA		217.6	32.9	NA	
	1"-2"	343	10/16/2001 14:31	31.5	12.7	<LOD	16.95	101.5	29.4	<LOD	66.45	<LOD	121.05	12499.2	480	<LOD	270	NA		7.5	5
	3"-4"	344	10/16/2001 14:34	38.9	15.1	<LOD	18.9	113.5	34	<LOD	74.55	<LOD	138.3	13593.6	560	<LOD	315	NA		<LOD	8.55
Location No. 17 D.D. Eisenhower HS (See other sheet)	Surface	345	10/16/2001 14:38	42.5	14.4	<LOD	18.45	120.4	32.4	<LOD	72.3	<LOD	119.85	10796.8	460	<LOD	270	NA		<LOD	7.5
	Surface	346	10/16/2001 14:40	NA		NA		NA		NA		NA		NA		NA		200.7	51.9	NA	
	1"-2"	347	10/16/2001 14:41	38.8	23.8	<LOD	32.25	87.4	52.4	<LOD	119.55	<LOD	210	10297.6	790	<LOD	480	NA		<LOD	13.65
	3"-4"	348	10/16/2001 14:42	<LOD	36.75	<LOD	32.55	88.9	55.6	<LOD	132.45	<LOD	225	12198.4	880	<LOD	525	NA		<LOD	14.1
Location No. 18 D.D. Eisenhower HS (See other sheet)	Surface	349	10/16/2001 14:45	36.4	12.7	<LOD	16.35	68.4	27.5	<LOD	61.35	<LOD	115.2	11897.6	450	<LOD	240	NA		<LOD	7.2
	Surface	350	10/16/2001 14:46	NA		NA		NA		NA		NA		NA		NA		254.2	53.3	NA	
	1"-2"	351	10/16/2001 14:48	<LOD	31.65	<LOD	31.05	<LOD	73.35	<LOD	126.6	<LOD	225	12896	869.6	<LOD	480	NA		<LOD	13.65
	3"-4"	352	10/16/2001 14:48	<LOD	32.25	<LOD	30.15	<LOD	78.9	<LOD	127.95	<LOD	240	13388.8	929.6	<LOD	525	NA		<LOD	14.4
Location No. 19 Greenwood Elementary (See other sheet)	Surface	353	10/16/2001 15:12	<LOD	34.8	<LOD	27.9	<LOD	73.65	<LOD	112.5	<LOD	195	9286.4	750	<LOD	450	NA		<LOD	14.7
	Surface	354	10/16/2001 15:13	NA		NA		NA		NA		NA		NA		NA		312.4	110	NA	
	1"-2"	355	10/16/2001 15:15	<LOD	33.9	<LOD	28.05	97.7	51.7	<LOD	118.5	<LOD	195	9619.2	740	<LOD	405	NA		<LOD	13.5
	3"-4"	356	10/16/2001 15:16	55.4	25.3	<LOD	32.85	123.5	54.8	<LOD	120.6	<LOD	210	11097.6	790	<LOD	525	NA		<LOD	14.4
Location No. 22	Surface	357	10/16/2001 16:35	89.8	17.5	<LOD	21.45	208.6	37.1	<LOD	76.65	<LOD	122.7	11398.4	470	<LOD	255	NA		<LOD	7.35

**TABLE - 1**  
**CLARK/BLEU ISLAND**  
**OCTOBER 2001 XRF DATA**

Description	Depth	XLNo	Date/Time	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Cr	Cr Error	Ba	Ba Error	Mo	Mo Error
	Surface	358	10/16/2001 16:37	NA		NA		NA		NA		NA		NA		NA		1400	130	NA	
	1"-2"	359	10/16/2001 16:39	82.7	35.4	<LOD	43.5	172.8	72.8	<LOD	150	<LOD	285	10297.6	929.6	<LOD	570	NA		<LOD	16.35
	1"-2"	360	10/16/2001 16:40	NA		NA		NA		NA		NA		NA		NA		659.2	110	NA	
	3"-4"	361	10/16/2001 16:42	163.7	34.7	<LOD	41.25	286.8	66.3	<LOD	133.35	<LOD	210	14592	860	<LOD	495	NA		<LOD	13.2
	3"-4"	362	10/16/2001 16:43	NA		NA		NA		NA		NA		NA		NA		372.8	110	NA	
Location No. 23	Surface	363	10/16/2001 17:01	41.1	22.5	<LOD	30.6	94.3	48.1	<LOD	108.75	<LOD	210	12198.4	780	<LOD	420	NA		<LOD	12.6
	Surface	364	10/16/2001 17:01	NA		NA		NA		NA		NA		NA		NA		254.6	83.1	NA	
	1"-2"	365	10/16/2001 17:02	94	30	<LOD	36.9	190.3	60.1	<LOD	120	<LOD	225	12896	849.6	<LOD	450	NA		<LOD	13.35
	1"-2"	366	10/16/2001 17:03	NA		NA		NA		NA		NA		NA		NA		129.4	72.2	NA	
	3"-4"	367	10/16/2001 17:04	83.5	30.7	<LOD	38.85	178.2	64.2	<LOD	137.25	<LOD	225	12998.4	909.6	<LOD	510	NA		<LOD	14.55
Location No. 24	Surface	368	10/16/2001 17:13	81	26.6	<LOD	33.9	168.5	53.8	<LOD	108.45	<LOD	195	11596.8	750	<LOD	450	NA		<LOD	
	Surface	369	10/16/2001 17:14	NA		NA		NA		NA		NA		NA		NA		337.2	100	NA	12.45
	1"-2"	370	10/16/2001 17:15	91.1	31.9	<LOD	38.1	132	59.8	<LOD	133.05	<LOD	240	13388.8	929.6	<LOD	510	NA		<LOD	14.7
	3"-4"	371	10/16/2001 17:16	92.2	32.4	<LOD	40.05	187.7	68.4	<LOD	165	<LOD	255	14297.6	969.6	<LOD	510	NA		<LOD	13.5
Location No. 25 Kerr Middle School (See other sheet)	Surface	372	10/16/2001 17:21	224.6	59.7	<LOD	77.4	317.8	110	<LOD	270	818.8	320	16089.6	1300	6624	1100	NA		75.6	16.9
	1"-2"	373	10/16/2001 17:24	53.9	23.4	<LOD	30.15	102.5	47.6	<LOD	103.65	<LOD	180	11296	740	<LOD	420	NA		<LOD	12.6
	Surface	374	10/16/2001 17:25	NA		NA		NA		NA		NA		NA		NA		353.6	99.3	NA	
	1"-2"	375	10/16/2001 17:26	65	23.6	<LOD	28.05	105.4	46.1	<LOD	103.05	<LOD	180	10899.2	690	<LOD	420	NA		<LOD	12
	3"-4"	376	10/16/2001 17:28	<LOD	36	<LOD	32.7	<LOD	76.35	<LOD	127.2	<LOD	225	11596.8	820	<LOD	495	NA		25	10.3
Location No. 26	Surface	377	10/16/2001 17:36	185.3	33.3	<LOD	40.2	257.8	57	<LOD	106.95	<LOD	180	11398.4	700	<LOD	405	NA		<LOD	
	Surface	378	10/16/2001 17:37	NA		NA		NA		NA		NA		NA		NA		618.4	140	NA	11.4
	1"-2"	379	10/16/2001 17:38	180.9	33.9	<LOD	39.75	206.4	56.3	<LOD	118.95	<LOD	195	12998.4	760	<LOD	435	NA		NA	
	1"-2"	380	10/16/2001 17:39	NA		NA		NA		NA		NA		NA		NA		817.6	170	NA	8.4
	3"-4"	381	10/16/2001 17:40	NA		NA		NA		NA		NA		NA		NA		447.2	120	NA	
	3"-4"	382	10/16/2001 17:40	156.6	34.3	<LOD	39.6	136	51.7	<LOD	105	<LOD	210	13593.6	829.6	<LOD	465	NA		<LOD	12.3
Location No. 27	Surface	383	10/16/2001 17:52	114.6	33.4	<LOD	39.45	110.6	56.8	<LOD	135.6	<LOD	225	11494.4	829.6	<LOD	510	NA		<LOD	13.5
	Surface	384	10/16/2001 17:53	NA		NA		NA		NA		NA		NA		NA		88.5	58.3	NA	
	1"-2"	385	10/16/2001 17:54	39.6	15.7	<LOD	19.95	117.3	34.9	<LOD	78	<LOD	144	12800	550	<LOD	285	NA		<LOD	8.7
	1"-2"	386	10/16/2001 17:56	NA		NA		NA		NA		NA		NA		NA		360	120	NA	
	3"-4"	387	10/16/2001 17:57	45.8	28.4	<LOD	36.9	<LOD	85.65	<LOD	139.8	<LOD	270	15091.2	1000	<LOD	615	NA		<LOD	16.35
Location No. 28	Surface	388	10/16/2001 18:10	249.8	39.7	<LOD	46.05	143	52.3	<LOD	117.15	<LOD	195	12499.2	770	<LOD	420	NA		<LOD	
	Surface	389	10/16/2001 18:11	NA		NA		NA		NA		NA		NA		NA		369	110	NA	12.15
	1"-2"	390	10/16/2001 18:12	237.4	44.8	<LOD	51.75	106.8	57.1	<LOD	133.8	<LOD	240	12896	889.6	<LOD	480	NA		<LOD	13.8
	3"-4"	391	10/16/2001 18:13	1169.6	110	<LOD	114.15	<LOD	101.55	<LOD	150	<LOD	300	15091.2	1100	<LOD	750	NA		<LOD	12
	3"-4"	392	10/16/2001 18:15	NA		NA		NA		NA		NA		NA		NA		340	130	NA	
	6"	393	10/16/2001 18:16	190.2	42.6	<LOD	51.75	170.7	66	<LOD	141.3	<LOD	240	13196.8	940	<LOD	525	NA		<LOD	10.7
Location No. 29	Surface	394	10/16/2001 18:30	40.7	24.9	<LOD	35.4	92.8	54.6	<LOD	126.15	<LOD	195	6057.6	620	<LOD	435	NA		16.2	9.9
	Surface	395	10/16/2001 18:31	NA		NA		NA		NA		NA		NA		NA		350	120	NA	
	1"-2"	396	10/16/2001 18:32	55.8	25.6	<LOD	33.9	88.1	51	<LOD	114.15	<LOD	180	6848	630	<LOD	405	NA		<LOD	13.35
	3"-4"	397	10/16/2001 18:33	59.3	28.5	<LOD	33.9	<LOD	79.05	<LOD	130.05	<LOD	225	8537.6	740	565.6	360	NA		<LOD	14.7
	3"-4"	398	10/16/2001 20:32	NA		NA		NA		NA		NA		NA		NA		NA		NA	

**TABLE - 1**  
**CLARK/BLEU ISLAND**  
**OCTOBER 2001 XRF DATA**

Description	Depth	XLNo	Ssec	Date/Time	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Cr	Cr Error	Co	Co Error	Mn	Mn Error	Ba	Ba Error	Mo	Mo Error	Cd	Cd Error
Location No. 30	Surface	7	24.2	10/17/2001 9:01	104.1	28.4	<LOD	34.35	154.1	52.7	<LOD	113.25	<LOD	180	9235.2	680	<LOD	405	<LOD	315	<LOD	735	NA		<LOD	11.85	NA	
	Surface	8	25.2	10/17/2001 9:02	NA		NA		NA		NA		NA		NA		NA		NA		NA	247.8	92.4	NA	<LOD	NA	58.95	
	1'-2"	9	20.1	10/17/2001 9:03	121.7	32.2	<LOD	36.9	122.6	53.7	<LOD	120.75	<LOD	195	9836.8	730	<LOD	390	<LOD	360	<LOD	780	NA		<LOD	12.9	NA	
	3'-4"	10	20.3	10/17/2001 9:04	103.3	33	<LOD	37.95	168.3	62	<LOD	129.15	<LOD	240	12499.2	900	<LOD	666	<LOD	450	<LOD	1020	NA		<LOD	13.95	NA	
Location No. 31	Surface	11	20.1	10/17/2001 9:23	141.8	34.1	<LOD	39.15	148.1	56.7	<LOD	124.5	<LOD	195	10498	780	<LOD	405	<LOD	360	<LOD	825	NA		<LOD	12.3	NA	
	Surface	12	21.1	10/17/2001 9:24	NA		NA		NA		NA		NA		NA		NA		NA		NA	306	100	NA	<LOD	NA	82.5	
	1'-2"	13	20.1	10/17/2001 9:25	125.9	33.7	<LOD	41.25	144.9	58.4	<LOD	132.9	<LOD	210	11200	810	<LOD	465	<LOD	390	<LOD	915	NA		<LOD	13.85	NA	
	1'-2"	14	21.1	10/17/2001 9:26	NA		NA		NA		NA		NA		NA		NA		NA		NA	335.6	120	NA	<LOD	NA	59.85	
Location No. 32	Surface	15	20.3	10/17/2001 9:27	119.7	34.4	<LOD	40.85	114.1	56.3	<LOD	122.55	<LOD	225	12800	889.8	<LOD	648	<LOD	420	<LOD	900	NA		<LOD	15.15	NA	
	Surface	16	20.2	10/17/2001 9:29	150.4	36.7	<LOD	42.15	426.8	82.1	<LOD	147.75	<LOD	225	11795.2	840	<LOD	510	<LOD	390	<LOD	930	NA		<LOD	13.5	NA	
	Surface	17	21.3	10/17/2001 9:29	NA		NA		NA		NA		NA		NA		NA		NA		NA	399.8	130	NA	<LOD	NA	85.65	
	1'-2"	18	20.2	10/17/2001 9:30	305	49.5	<LOD	58.5	713.2	110	<LOD	259.4	<LOD	270	14988.8	969.8	<LOD	708.4	<LOD	450	<LOD	1005	NA		<LOD	13.8	NA	
Location No. 33	Surface	19	21.1	10/17/2001 9:32	NA		NA		NA		NA		NA		NA		NA		NA		NA	344.6	130	NA	<LOD	NA	102.6	
	1'-2"	20	20.3	10/17/2001 9:32	72.7	29.4	<LOD	36.75	158.1	64.5	<LOD	150	<LOD	255	12697.6	900	<LOD	480	<LOD	405	<LOD	945	NA		<LOD	14.25	NA	
	Surface	22	21.1	10/17/2001 9:46	103.3	33.3	<LOD	40.5	105.7	58.3	<LOD	143.7	<LOD	255	13798.4	940	<LOD	555	<LOD	450	<LOD	1085	NA		<LOD	14.1	NA	
	Surface	23	20.4	10/17/2001 9:47	NA		NA		NA		NA		NA		NA		NA		NA		NA	292.6	110	NA	<LOD	NA	49.05	
Location No. 34	Surface	24	20.2	10/17/2001 9:59	33	21.2	<LOD	25.8	<LOD	60.15	<LOD	99.15	<LOD	185	5507.2	540	<LOD	375	<LOD	270	<LOD	615	NA		<LOD	12	NA	
	Surface	25	21.2	10/17/2001 10:00	NA		NA		NA		NA		NA		NA		NA		NA		NA	239.4	96.2	NA	<LOD	NA	53.7	
	1'-2"	26	20.2	10/17/2001 10:01	<LOD	28.5	<LOD	25.8	<LOD	66.9	<LOD	108.9	<LOD	180	5849.6	560	<LOD	390	<LOD	285	<LOD	645	NA		<LOD	11.55	NA	
	3'-4"	27	20.4	10/17/2001 10:02	38.6	24.6	<LOD	29.7	87	51.5	<LOD	107.1	<LOD	210	7609.6	690	<LOD	480	<LOD	330	<LOD	825	NA		<LOD	13.8	NA	
Location No. 35	Surface	28	20.2	10/17/2001 10:15	<LOD	32.85	<LOD	27.75	<LOD	75.15	<LOD	126.45	<LOD	210	7596.8	650	<LOD	435	<LOD	300	<LOD	780	NA		<LOD	12.9	NA	
	Surface	29	21.2	10/17/2001 10:16	NA		NA		NA		NA		NA		NA		NA		NA		NA	151.5	81.9	NA	<LOD	NA	67.2	
	1'-2"	30	20.3	10/17/2001 10:17	43.4	24.8	<LOD	32.1	107.4	54.1	<LOD	119.4	<LOD	195	8480	720	<LOD	450	<LOD	360	<LOD	825	NA		<LOD	13.35	NA	
	3'-4"	31	20.2	10/17/2001 10:17	75.2	27.9	<LOD	30.6	99.5	52.1	<LOD	116.4	<LOD	195	8627.2	700	<LOD	390	<LOD	345	<LOD	765	NA		<LOD	13.5	NA	
Location No. 36	Surface	32	20.2	10/17/2001 13:07	88.6	30.6	<LOD	37.8	205.6	65.7	<LOD	144.45	<LOD	240	14592	949.6	<LOD	570	<LOD	450	<LOD	1050	NA		<LOD	14.7	NA	
	Surface	33	20.9	10/17/2001 13:08	NA		NA		NA		NA		NA		NA		NA		NA		NA	363.2	120	NA	<LOD	NA	62.25	
	1'-2"	34	20.3	10/17/2001 13:09	84.8	31.1	<LOD	39.3	164.4	66.2	<LOD	176.1	<LOD	255	13593.6	949.6	<LOD	510	<LOD	465	<LOD	1050	NA		<LOD	14.4	NA	
	3'-4"	35	20.5	10/17/2001 13:10	80.2	32.2	<LOD	41.4	129	64.7	<LOD	165	<LOD	255	14899.2	1000	<LOD	585	<LOD	495	<LOD	1110	NA		<LOD	18.8	NA	
Location No. 37 Sears Park Alsip Park District (see other sheet)	Surface	36	28.2	10/17/2001 13:20	<LOD	29.25	<LOD	25.05	110.8	49.4	<LOD	108.6	<LOD	210	14796.8	860	<LOD	786.4	<LOD	405	<LOD	900	NA		<LOD	19.4	NA	
	Surface	37	25.6	10/17/2001 13:21	NA		NA		NA		NA		NA		NA		NA		NA		NA	298.8	120	NA	<LOD	NA	60.15	
	1'-2"	38	24.6	10/17/2001 13:22	<LOD	33.45	<LOD	29.1	94.7	55.5	<LOD	141.75	<LOD	240	16294.4	989.8	<LOD	972.8	<LOD	430	<LOD	1080	NA		<LOD	19.5	NA	
	3'-4"	39	25.2	10/17/2001 13:24	<LOD	42.45	<LOD	36.45	<LOD	96.45	<LOD	165	<LOD	330	20390.4	1400	<LOD	1729.6	<LOD	630	<LOD	1484.4	NA		<LOD	32	NA	
Location No. 38 Sears Park Alsip Park District (see other sheet)	Surface	40	24.5	10/17/2001 13:31	74.8	26.8	<LOD	29.85	97.8	50.1	<LOD	114.75	<LOD	210	9849.6	720	<LOD	405	<LOD	345	<LOD	795	NA		<LOD	12.9	NA	
	Surface	41	25.1	10/17/2001 13:31	NA		NA		NA		NA		NA		NA		NA		NA		NA	254.6	100	NA	<LOD	NA	80.75	
	1'-2"	42	24.5	10/17/2001 13:32	60.6	25.2	<LOD	30.3	109.2	51.7	<LOD	121.85	<LOD	195	11897.6	780	<LOD	450	<LOD	360	<LOD	825	NA		<LOD	12.6	NA	
	3'-4"	43	20.4	10/17/2001 13:33	42.3	26.1	<LOD	35.25	113	58	<LOD	128.7	<LOD	240	13299.2	940	<LOD	540	<LOD	435	<LOD	1035	NA		<LOD	14.85	NA	
Catalyst Pile Catalyst Pile		44	63.8	10/17/2001 14:39	53.4	20.9	<LOD	27	<LOD	136.95	<LOD	37.5	<LOD	680	11494.4	610	<LOD	405	<LOD	405	<LOD	675	NA		<LOD	64.1	NA	
		45	63.7	10/17/2001 14:41	NA		NA		NA		NA		NA		NA		NA		NA		NA	<LOD	49.35	NA		<LOD	93.7	49.6
Location No. 39 Commissioners Park Alsip Park District (see other sheet)	Surface	46	39.7	10/17/2001 17:07	NA		NA		NA		NA		NA		NA		NA		NA		NA	NA			<LOD	NA	NA	
	Surface	47	20.1	10/17/2001 17:07	46.2	24.9	<LOD	31.8	95.1	52.7	<LOD	121.65	<LOD	210	10598.4	790	<LOD	450	<LOD	390	<LOD	870	NA		<LOD	14.4	NA	
	Surface	48	25	10/17/2001 17:08	NA		NA		NA		NA		NA		NA		NA		NA		NA	249.8	91.3	NA	<LOD	NA	66.45	
	1'-2"	49	20.5	10/17/2001 17:09	52.7	28	<LOD	36.15	91	57.5	<LOD	133.5	<LOD	255	12697.8	940	<LOD	570	<LOD	450	<LOD	1050	NA		<LOD	15.3	NA	
Location No. 40 Commissioners Park Alsip Park District (see other sheet)	Surface	50	20.6	10/17/2001 17:10	46.7	27.5	<LOD	33.6	<LOD	82.2	<LOD	125.55	<LOD	240	11598.8	889.6	<LOD	510	<LOD	420	<LOD	990	NA		<LOD	16.05	NA	
	Surface	51	23.8	10/17/2001 17:15	221	37.2	<LOD	45	863.2	97.1	<LOD	180	<LOD	180	29593.8	1200	<LOD	711.6	<LOD	525	<LOD	1200	NA		<LOD	11.25	NA	
	Surface	52	21	10/17/2001 17:16	NA		NA		NA		NA		NA		NA		NA		NA		NA	216.8	89.1	NA	<LOD	NA	<LOD	78.6
	1'-2"	53	20.1	10/17/2001 17:17	278.6	49.3	<LOD	58.8	1020	130	<LOD	451.6	<LOD	360	36198.4	1600	<LOD	894.4	<LOD	530	<LOD	1650	NA		<LOD	14.25	NA	
Location No. 41 Commissioners Park	Surface	54	32.5	10/17/2001 17:19	268.6	41.7	<LOD	51.3	1020	110	<LOD	355.6	<LOD	315	44876.8	1800	<LOD	1120	<LOD	470	<LOD	1484.4	NA		<LOD	12.3	NA	
	3'-4"	55	23.6	10/17/2001 17:29	30.8	18.6	<LOD	22.5	79	40.3	<LOD	92.7	<LOD	150	7360	540	<LOD	330	<LOD	270	<LOD	600	NA		<LOD	10.65	NA	
Location No. 42	Surface	56	24.8	10/17/2001 17:45	70.4	27.8	<LOD	33.9	78.3	51	<LOD	123.3	<LOD	225	12697.8	860	<LOD	495	<LOD	450.8	<LOD	915	NA		<LOD	14.4	NA	
	Surface	57	25.5	10/17/2001 17:45	NA		NA		NA		NA		NA		NA		NA		NA		NA	210.6	86	NA	<LOD	NA	<LOD	51.75
	1'-2"	58	20.3	10/17/2001 17:46	154.3	36.8	<LOD	42.15	168	60.6	<LOD	129.75	<LOD	225	14592	929.6	<LOD	480	<LOD	435	<LOD	1005	NA		<LOD	13.65	NA	
	3'-4"	59	20.1	10/17/2001 17:48	54.1	26.4	<LOD	29.55	115.8	56.6	<LOD	123.3	<LOD	225	13388.8	920	<LOD	495	<LOD	420	<LOD	990	NA		<LOD	14.85	NA	
Location No. 43	Surface	60	23.9	10/17/2001 17:59	78.7	25.2																						

**TABLE - 1**  
**CLARK/BLUE ISLAND**  
**OCTOBER 2001 XRF DATA**

Description	Depth	XLNo	Ssec	Date/Time	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Cr	Cr Error	Co	Co Error	Mn	Mn Error	Ba	Ba Error	Mo	Mo Error	Cd	Cd Error
	Surface	81	29.1	10/17/2001 18:00	NA		NA		NA		NA		NA		NA		NA		NA		NA		457.6	110	NA		<LOD	45.9
	1'-2"	82	24.1	10/17/2001 18:01	103.6	28.3	<LOD	32.1	149.5	52.4	<LOD	115.2	<LOD	180	11200	730	<LOD	390	<LOD	345	<LOD	795	NA		<LOD	12.75	<LOD	NA
	3'-4"	83	20.3	10/17/2001 18:02	80.7	29.8	<LOD	36.15	153.2	60.1	<LOD	128.55	<LOD	225	11897.6	849.6	<LOD	465	<LOD	390	<LOD	915	NA		17.6	10.2	NA	NA
Location No. 20 All Dried City Right of Way-BI	Surface	85	20.8	10/18/2001 18:15	218.8	51	<LOD	62.25	229.6	82.6	<LOD	180	<LOD	300	16396.8	1200	<LOD	630	<LOD	555	<LOD	1304.4	NA		<LOD	17.4	NA	NA
	Surface	86	25.8	10/18/2001 18:16	NA		NA		NA		NA		NA		NA		NA		NA		NA		324	120	<LOD	<LOD	77.85	
	2'-4"	81	63.6	10/18/2001 18:08	NA		NA		NA		NA		NA		NA		NA		NA		NA		166	83.6	NA	<LOD	53.55	
	2'-4"	82	25.2	10/18/2001 18:09	245	54.1	<LOD	61.95	131.6	71.2	<LOD	150	<LOD	270	12499.2	1000	<LOD	585	<LOD	510	<LOD	1125	NA		<LOD	18	NA	
	4'-8"	99	24.6	10/18/2001 18:32	384.6	57.7	<LOD	66.15	541.6	97	<LOD	180	<LOD	300	26982.4	1400	<LOD	630	<LOD	630	<LOD	1394.4	NA		<LOD	15.75	NA	NA
	4'-6"	100	34.3	10/18/2001 18:32	NA		NA		NA		NA		NA		NA		NA		NA		NA		431.8	130	NA	<LOD	82.5	
Location No. 21 Dried Dried	Surface	101	25.2	10/18/2001 18:34	NA		NA		NA		NA		NA		NA		NA		NA		NA		277.2	99.3	NA	<LOD	52.95	
	Surface	102	20.4	10/18/2001 18:34	124.2	36.5	<LOD	46.35	131.5	62.6	<LOD	140.55	<LOD	240	10995.2	869.6	<LOD	525	<LOD	405	<LOD	945	NA		<LOD	14.55	NA	NA
	2'-4"	77	72.2	10/18/2001 15:54	NA		NA		NA		NA		NA		NA		NA		NA		NA		258.2	52.6	NA	<LOD	35.55	
	2'-4"	78	63.9	10/18/2001 15:55	147.3	19.4	<LOD	22.8	178.5	32.9	<LOD	68.7	<LOD	118.2	12897.6	470	255	170	<LOD	225	<LOD	510	NA		<LOD	7.35	NA	NA
	2'-4"	79	62	10/18/2001 16:04	134	23	<LOD	27.75	222.6	43.4	<LOD	88.5	<LOD	147.8	14694.4	620	<LOD	330	<LOD	285	<LOD	675	NA		10.9	6.3	NA	NA
	2'-4"	80	68.1	10/18/2001 16:06	NA		NA		NA		NA		NA		NA		NA		NA		NA		247.6	66.8	NA	<LOD	45.6	
	Dried	4'-6"	103	20.6	10/18/2001 16:36	<LOD	43.95	<LOD	39.75	125.4	87.4	<LOD	150	<LOD	285	16396.6	1200	<LOD	615	<LOD	540	<LOD	1334.4	NA		<LOD	17.7	NA
Dried	4'-8"	104	25.6	10/18/2001 16:36	NA		NA		NA		NA		NA		NA		NA		NA		NA		285	120	NA	<LOD	70.2	
S-101	Dried	93	42.2	10/18/2001 16:28	NA		NA		NA		NA		NA		NA		NA		NA		NA		313.2	83.7	NA	<LOD	55.5	
Cal Sag (UG)	Dried	94	24.4	10/18/2001 16:26	178.4	38.8	<LOD	46.05	423.2	81.3	<LOD	150	<LOD	240	18099.2	1000	<LOD	555	<LOD	480	<LOD	1110	NA		<LOD	13.8	NA	NA
S-102 Stony Creek Discharge All Dried	Surface	87	25.7	10/18/2001 16:19	NA		NA		NA		NA		NA		NA		NA		NA		NA		170.7	100	NA	<LOD	67.65	
	Surface	88	20.6	10/18/2001 16:19	127.6	40.1	<LOD	51.9	249.8	78.7	<LOD	150	<LOD	285	17792	1200	<LOD	630	<LOD	555	<LOD	1304.4	NA		<LOD	15.9	NA	NA
	2'-3"	91	20.3	10/18/2001 16:24	254	47.1	<LOD	58.65	479.6	91.4	<LOD	180	<LOD	270	17497.6	1100	<LOD	585	<LOD	495	<LOD	1200	NA		<LOD	13.8	NA	NA
	2'-3"	92	51.2	10/18/2001 16:24	NA		NA		NA		NA		NA		NA		NA		NA		NA		199.3	74.7	NA	<LOD	59.85	
S-103 Stony Creek-UG Dried	0-6"	69	63.6	10/18/2001 15:33	108.2	16.2	<LOD	19.5	178.1	30.6	<LOD	62.4	<LOD	106.5	11596.8	420	<LOD	225	<LOD	195	<LOD	450	NA		<LOD	6.3	NA	NA
	0-6"	70	63.6	10/18/2001 15:35	NA		NA		NA		NA		NA		NA		NA		NA		NA		131.1	51.4	NA	<LOD	43.95	
	0-6"	73	63.7	10/18/2001 15:48	NA		NA		NA		NA		NA		NA		NA		NA		NA		238.4	77.2	NA	<LOD	36.75	
	0-6"	74	62.2	10/18/2001 15:48	178.7	27.7	<LOD	33.6	324.4	53.2	<LOD	105.3	<LOD	195	21388.8	810	<LOD	405	<LOD	483.6	<LOD	885	NA		10.8	7	NA	NA
S-104 (0-3") Mosquito to Stony	Dried	97	21.2	10/18/2001 16:31	NA		NA		NA		NA		NA		NA		NA		NA		NA		<LOD	119.7	NA	<LOD	90.6	
	Dried	98	20.4	10/18/2001 16:31	248.6	46.8	<LOD	57.6	966.4	120	<LOD	210	<LOD	270	19891.2	1200	<LOD	540	<LOD	540	<LOD	1230	NA		<LOD	13.65	NA	NA
S-105 (2'-6") Mosquito Creek (DG)	2 min	83	62.8	10/18/2001 16:11	102.3	15	<LOD	18.3	212.4	30.5	<LOD	59.1	<LOD	95.7	8857.6	350	<LOD	195	<LOD	249.8	<LOD	390	NA		8.5	4.2	NA	NA
	2 min	84	63.4	10/18/2001 16:12	NA		NA		NA		NA		NA		NA		NA		NA		NA		159.5	48.5	NA	<LOD	35.7	
	4 min	95	61.2	10/18/2001 16:28	119	19.6	<LOD	24.45	345.6	45.1	<LOD	83.55	<LOD	132.45	12896	530	<LOD	285	<LOD	240	<LOD	585	NA		14.5	5.4	NA	NA
	4 min	96	63.7	10/18/2001 16:29	NA		NA		NA		NA		NA		NA		NA		NA		NA		165.6	64	NA	<LOD	43.2	
S-106 Mosquito Creek (UG) Dried	2'-4"	71	63.4	10/18/2001 15:40	91.8	14.6	<LOD	17.4	129.7	27.1	<LOD	56.7	<LOD	89.1	5600	290	<LOD	195	<LOD	141	<LOD	345	NA		<LOD	6	NA	NA
	2'-4"	72	63.3	10/18/2001 15:41	NA		NA		NA		NA		NA		NA		NA		NA		NA		196.1	52.8	NA	<LOD	37.35	
	Dried	75	60.4	10/18/2001 15:51	159.9	20.9	<LOD	23.7	207.8	35.8	<LOD	70.05	<LOD	111.45	9305.8	420	<LOD	255	<LOD	195	<LOD	480	NA		<LOD	7.35	NA	NA
	Dried	76	63.8	10/18/2001 15:52	NA		NA		NA		NA		NA		NA		NA		NA		NA		204.3	58.9	NA	<LOD	45.6	
	Dried	89	20.4	10/18/2001 16:22	218.4	45.8	<LOD	52.95	451.2	90.5	<LOD	165	<LOD	270	15296	1000	<LOD	555	<LOD	495	<LOD	1125	NA		<LOD	15	NA	NA
	Dried	90	38.6	10/18/2001 16:22	NA		NA		NA		NA		NA		NA		NA		NA		NA		225.8	79.3	NA	<LOD	51.3	

**TABLE - 2**  
**CLARK/BLEU ISLAND ANALYTICAL DATA (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE # 29954**  
**INORGANIC SEDIMENT RESULTS**

Sample Number :	ME00J6		ME00L9		ME00K4		ME00J2		ME00K3		ME00K9		ME00L2		ME00L4	
Sampling Location :	X201		X202		X203		X204		X205		X206		X207		X208	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/08/2001		11/08/2001	
Time Sampled :	11:30		13:20		15:45		09:00		15:15		16:15		08:45		09:45	
%Solids :	44.3		77.7		80.2		51.8		50.9		52.3		45.0		58.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	5260		5590		4670		5170		6690		7530		8500		8160	
ANTIMONY	1.9		0.64	UJ	0.62	U	2.6		3.9		5.5		4.9	J	17.0	J
ARSENIC	5.3		5.7		10.2		6.3		14.5		23.0		54.0		11.6	
BARIUM	152		43.0		39.7		356		202		69.2		150		317	
BERYLLIUM	0.35		0.33		0.33		0.56		0.70		0.38		0.47		0.48	
CADMIUM	2.1		0.10	U	0.26		1.2		5.9		0.81		0.60		14.2	
CALCIUM	45300	J	48000		41800	J	49500	J	40600	J	70800	J	39700		50300	
CHROMIUM	42.2	J	9.3		10.3	J	44.0	J	71.5	J	46.7	J	51.7		67.3	
COBALT	7.1		6.4		8.7		5.6		7.8		7.0		12.0		10.4	
COPPER	89.6		18.6		33.4		72.5		157		52.1		90.4		402	
IRON	24100		14100		18900		19200		25600		77700		88400		23900	
LEAD	183		24.4		32.0		471		670		614		788		269	
MAGNESIUM	20300	J	25700		22900	J	26700	J	19700	J	40400	J	21500		30200	
MANGANESE	548	J	347		393	J	263	J	583	J	379	J	447		317	
MERCURY	0.26		0.060	U	0.060	U	4.4		1.2		0.16		1.3		0.14	
NICKEL	19.6		16.5		22.7		21.7		37.9		38.8		40.6		57.0	
POTASSIUM	1040	J	1160		1040	J	887	J	1120	J	1720	J	1530		1340	
SELENIUM	1.0		0.57	U	0.55	U	1.8		0.86	U	0.84	U	0.98	U	0.76	U
SILVER	1.5		0.23	U	0.22	U	8.0		0.60		0.34	U	0.40	U	0.42	
SODIUM	964		520		776		997		1440		944		984		2400	
THALLIUM	1.6	U	0.90	U	0.87	U	1.4	U	1.4	U	1.3	U	3.6		1.3	
VANADIUM	12.0		14.3		13.0		15.5		26.6		22.1		55.3		28.6	
ZINC	533		60.2		142		336		771		1860		1580		1090	
CYANIDE	0.21	UJ	0.12	UJ	0.12	UJ	0.18	UJ	0.19	UJ	0.18	UJ	0.27	J	0.63	J

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**TABLE - 2**  
**CLARK/BLEU ISLAND ANALYTICAL DATA (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE # 29954**  
**INORGANIC SEDIMENT RESULTS**

Sample Number :	ME00L3		ME00L6		ME00L5		ME00K2		ME00J8		ME00J9		ME00J7	
Sampling Location :	X209		X210		X211		X212		X214		X250		X215	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/08/2001		11/08/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :	10:05		10:40		11:10		13:00		12:15		12:15		12:00	
%Solids :	31.8		40.4		68.7		39.9		35.5		35.1		42.8	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	13000		10200		5680		7510		8300		7400		6770	
ANTIMONY	3.8	J	1.2	UJ	0.73	UJ	1.5		2.6		1.6		2.4	
ARSENIC	9.2		4.2		7.2		8.2		6.7		6.6		6.7	
BARIUM	124		64.3		44.1		175		187		173		170	
BERYLLIUM	0.68		0.47		0.28		0.53		0.51		0.48		0.46	
CADMIUM	2.1		2.0		0.33		2.5		2.9		2.8		2.3	
CALCIUM	36600		25800		45500		50400	J	53900	J	47400	J	53000	J
CHROMIUM	128		38.2		16.1		52.0	J	58.3	J	55.3	J	48.4	J
COBALT	13.0		9.3		6.2		9.3		8.5		8.0		8.5	
COPPER	114		60.5		26.6		89.3		103		95.8		90.4	
IRON	23100		15900		14300		25900		26900		25100		26900	
LEAD	214		213		182		153		175		164		182	
MAGNESIUM	21200		12600		23900		23200	J	25500	J	21600	J	24800	J
MANGANESE	334		232		369		549	J	580	J	545	J	579	J
MERCURY	0.25		0.16		0.070	U	0.37		0.32		0.51		0.36	
NICKEL	51.2		101		16.7		26.0		26.5		24.5		25.2	
POTASSIUM	2570		1770		925		1600	J	1760	J	1590	J	1270	J
SELENIUM	1.6		1.1	U	0.64	U	1.1	U	1.2	U	1.3	U	1.0	U
SILVER	0.57	U	0.45	U	0.26	U	1.9		2.0		1.9		1.7	
SODIUM	1820		1110		784		1280		1390		1340		1090	
THALLIUM	2.2	U	1.7	U	1.0	U	1.8	U	2.0	U	2.0	U	1.6	U
VANADIUM	78.9		61.4		19.5		16.0		17.3		15.3		13.9	
ZINC	723		455		424		622		654		603		615	
CYANIDE	0.30	UJ	2.9	J	0.14	UJ	0.24	UJ	0.27	UJ	0.27	UJ	0.22	UJ

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**TABLE - 2**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**VOC SEDIMENT RESULTS**

Sample Number :	E00J6		E00L9		E00K4		E00J2		E00K3		E00K9		E00L2		E00L4		E00L3	
Sampling Location :	X201		X202		X203		X204		X205		X206		X207		X208		X209	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/08/2001		11/08/2001		11/08/2001	
Time Sampled :	11:30		13:20		15:45		09:00		15:15		16:15		08:45		09:45		10:05	
%Moisture :	63		29		21		50		46		40		45		52		67	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Acetone	19	J	14	UJ	10	J	7	J	56	J	34		18	U	21	U	33	
Carbon Disulfide	19	J	14	U	13	U	20	U	4	J	24	U	18	U	21	U	30	U
Methylene Chloride	27	U	14	U	13	U	20	U	4	J	24	U	2	J	21	U	30	U
2-Butanone	27	UJ	14	UJ	13	UJ	20	UJ	18	J	24	U	18	U	21	U	30	U
Methylcyclohexane	27	U	14	U	13	U	20	U	19	U	9	J	18	U	21	U	3	J
Toluene	27	U	14	U	13	U	20	U	5	J	24	U	18	U	21	U	30	U
Chlorobenzene	27	U	14	U	13	U	20	U	19	U	24	U	18	U	21	U	30	U
1,4-Dichlorobenzene	27	U	14	U	13	U	20	U	19	U	24	U	18	U	21	U	30	U

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**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**VOC SEDIMENT RESULTS**

Sample Number :	E00L6		E00L5		E00L5RE		E00K2		E00K1		E00J8		E00J9		E00J7	
Sampling Location :	X210		X211		X211		X212		X213		X214		X250		X215	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/08/2001		11/08/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :	10:40		11:10		11:10		13:00		12:30		12:15		12:15		12:00	
%Moisture :	41		30		30		58		0		68		65		61	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Acetone	13	J	21	J	12	J	24	UJ	10	UJ	14	J	29	UJ	28	
Carbon Disulfide	17	U	14	UJ	14	UJ	24	U	4	J	31	U	29	U	26	U
Methylene Chloride	17	U	14	UJ	14	UJ	24	U	2	J	31	U	29	U	26	U
2-Butanone	17	U	14	UJ	14	UJ	24	UJ	10	UJ	31	UJ	29	UJ	26	U
Methylcyclohexane	17	U	14	UJ	14	UJ	24	U	10	U	31	U	29	U	26	U
Toluene	17	U	14	UJ	14	UJ	24	U	1	J	31	U	29	U	26	U
Chlorobenzene	17	U	14	UJ	14	UJ	24	U	35		31	U	29	U	26	U
1,4-Dichlorobenzene	17	U	14	UJ	14	UJ	24	U	31		31	U	29	U	26	U



**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SEDIMENT RESULTS**

Sample Number :	E00J2		E00J6		E00J6DL		E00J7		E00J7DL		E00J8		E00J8DL		E00J9		E00J9DL	
Sampling Location :	X204		X201		X201		X215		X215		X214		X214		X250		X250	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :	09:00		11:30		11:30		12:00		12:00		12:15		12:15		12:15		12:15	
%Moisture :	50		63		63		61		61		68		68		65		65	
pH	7.8		7.4		7.4		7.4		7.4		7.3		7.3		7.0		7.0	
Dilution Factor :	1.0		1.0		2.0		1.0		2.0		1.0		2.0		1.0		2.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	26	J	130	J	140	J	130	J	130	J	130	J	130	J	120	J	120	J
Phenol	660	U	890	U	1800	U	35	J	1700	U	1000	U	2100	U	940	U	1900	U
Acetophenone	22	J	94	J	100	J	74	J	94	J	80	J	88	J	69	J	69	J
4-Methylphenol	37	J	150	J	170	J	120	J	160	J	150	J	190	J	220	J	240	J
2,4-Dimethylphenol	660	U	890	U	1800	U	850	U	1700	U	1000	U	2100	U	940	U	1900	U
Naphthalene	54	J	170	J	180	J	180	J	220	J	160	J	180	J	220	J	1900	U
4-Chloroaniline	660	U	890	U	1800	U	850	U	1700	U	1000	U	2100	U	940	U	1900	U
2-Methylnaphthalene	35	J	170	J	180	J	210	J	220	J	190	J	210	J	220	J	230	J
1,1'-Biphenyl	660	U	50	J	53	J	56	J	60	J	50	J	59	J	59	J	64	J
Acenaphthylene	650	J	280	J	300	J	290	J	350	J	270	J	310	J	260	J	290	J
Acenaphthene	76	J	240	J	260	J	260	J	290	J	200	J	220	J	270	J	290	J
Dibenzofuran	38	J	190	J	190	J	150	J	180	J	140	J	170	J	160	J	160	J
Fluorene	100	J	360	J	380	J	320	J	370	J	270	J	300	J	310	J	320	J
N-Nitrosodiphenylamine	660	U	430	J	1800	U	850	U	1700	U	450	J	2100	U	420	J	1900	U
Phenanthrene	630	J	2800		2900		2100		2300		1800		2100	J	2200		2200	
Anthracene	380	J	690	J	770	J	580	J	690	J	540	J	620	J	660	J	690	J
Carbazole	43	J	460	J	510	J	340	J	410	J	340	J	400	J	360	J	390	J
Di-n-butylphthalate	660	U	890	U	1800	U	850	U	1700	U	1000	U	2100	U	940	U	1900	U
Fluoranthene	1500		5600		6400		4600		5500		4000		4900		4500		5300	
Pyrene	1800	J	5800		5600		5400		5500		4800		4700		5600		4700	
Butylbenzylphthalate	18	J	280	J	290	J	140	J	150	J	160	J	170	J	140	J	120	J
Benzo(a)anthracene	1200		3300		3200		2800		2900		2600		2500		3000		2600	
Chrysene	1500		3200		3600		2900		3500		2500		3200		2700		3200	
bis(2-Ethylhexyl)phthalate	660	U	9600		11000		9700		11000		10000		12000		9800		9400	
Di-n-octylphthalate	660	U	2200		2600		160	J	220	J	810	J	2100	U	940	U	1900	U
Benzo(b)fluoranthene	1200		5300		5500		5000		4400		4200		4700		4800		4400	
Benzo(k)fluoranthene	1100		2200		2600		1900		3300		2200		2500		2200		2500	
Benzo(a)pyrene	1400		3000		3500		2600		3200		2500		2800		2700		2800	
Indeno(1,2,3-cd)pyrene	560	J	1500		1500	J	1300		1400	J	1200		1300	J	1300		1300	J
Dibenzo(a,h)anthracene	230	J	510	J	440	J	400	J	430	J	350	J	400	J	410	J	380	J
Benzo(g,h,i)perylene	540	J	1300		1300	J	1200		1200	J	1100		1200	J	1200		1100	J

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**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SEDIMENT RESULTS**

Sample Number :	E00K2		E00K3		E00K3DL		E00K4		E00K9		E00K9RE		E00L2		E00L3		E00L4	
Sampling Location :	X212		X205		X205		X203		X206		X206		X207		X209		X208	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/08/2001		11/08/2001		11/08/2001	
Time Sampled :	13:00		15:15		15:15		15:45		16:15		16:15		08:45		10:05		09:45	
%Moisture :	58		46		46		21		40		40		45		67		52	
pH :	7.1		7.9		7.9		7.7		7.8		7.8		7.8		7.5		7.6	
Dilution Factor :	2.0		1.0		3.0		1.0		1.0		10.0		10.0		1.0		10.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	74	J	80	J	87	J	22	J	550	U	5500	UJ	93	J	110	J	88	J
Phenol	1600	U	610	U	1800	U	420	U	550	U	5500	U	6000	U	1000	U	6900	U
Acetophenone	56	J	42	J	66	J	420	U	550	U	5500	U	6000	U	60	J	6900	U
4-Methylphenol	160	J	25	J	1800	U	420	U	550	U	5500	U	6000	U	1000	U	6900	U
2,4-Dimethylphenol	1600	U	610	U	1800	U	420	U	550	U	5500	U	6000	U	1000	U	6900	U
Naphthalene	260	J	220	J	260	J	420	U	550	U	5500	U	6000	U	1000	U	320	J
4-Chloroaniline	1600	U	610	U	1800	U	420	U	550	U	5500	U	2900	J	1000	U	360	J
2-Methylnaphthalene	250	J	190	J	250	J	48	J	550	U	5500	U	270	J	52	J	6900	U
1,1'-Biphenyl	60	J	44	J	68	J	21	J	550	U	5500	U	6000	U	1000	U	6900	U
Acenaphthylene	220	J	120	J	170	J	420	U	550	U	5500	U	6000	U	61	J	450	J
Acenaphthene	470	J	490	J	640	J	25	J	550	U	5500	U	720	J	43	J	1100	J
Dibenzofuran	140	J	240	J	300	J	37	J	550	U	5500	U	6000	U	35	J	450	J
Fluorene	350	J	410	J	470	J	38	J	550	U	5500	U	6000	U	65	J	1100	J
N-Nitrosodiphenylamine	1600	U	610	U	1800	U	420	U	550	UJ	5500	U	6000	U	1000	U	6900	U
Phenanthrene	2100		4100		5300		140	J	550	UJ	5500	U	6000	U	380	J	14000	
Anthracene	560	J	1100		1400	J	21	J	550	UJ	5500	U	6000	U	150	J	4600	J
Carbazole	310	J	520	J	620	J	420	U	550	UJ	5500	U	6000	U	92	J	840	J
Di-n-butylphthalate	1600	U	610	U	96	J	420	U	550	UJ	5500	U	6000	U	1000	U	6900	U
Fluoranthene	4200		6200		9800		150	J	450	J	780	J	3400	J	1100		40000	
Pyrene	4900		8500		10000		160	J	610	J	1500	J	4000	J	1300		43000	
Butylbenzylphthalate	52	J	910		1100	J	420	U	550	UJ	5500	U	6000	U	90	J	1100	J
Benzo(a)anthracene	2200		3700		3300		56	J	180	J	280	J	1500	J	460	J	19000	
Chrysene	2400		3200		4300		110	J	390	J	520	J	1800	J	710	J	24000	
bis(2-Ethylhexyl)phthalate	8200		4600		5800		440	U	1300	U	5500	U	6400	U	1500	U	39000	
Di-n-octylphthalate	300	J	360	J	410	J	420	U	550	UJ	5500	UJ	6000	U	1000	U	5400	J
Benzo(b)fluoranthene	2800		4500	J	4500	J	110	J	220	J	220	J	1500	J	1300		32000	
Benzo(k)fluoranthene	2000		3000	J	4000	J	51	J	140	J	5500	UJ	1400	J	860	J	30000	
Benzo(a)pyrene	1900		3400	J	4000	J	60	J	100	J	130	J	1100	J	890	J	39000	
Indeno(1,2,3-cd)pyrene	1000	J	1600	J	2100	J	31	J	82	J	5500	UJ	770	J	660	J	20000	J
Dibenzo(a,h)anthracene	300	J	480	J	630	J	420	U	550	UJ	5500	UJ	240	J	160	J	6200	J
Benzo(g,h,i)perylene	960	J	1400	J	1900	J	51	J	99	J	5500	UJ	740	J	670	J	18000	

**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SEDIMENT RESULTS**

Sample Number :	E00L5		E00L5RE		E00L6		E00L9	
Sampling Location :	X211		X211		X210		X202	
Matrix :	Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/08/2001		11/08/2001		11/08/2001		11/08/2001	
Time Sampled :	11:10		11:10		10:40		13:20	
%Moisture :	30		30		41		29	
pH :	7.8		7.8		7.2		8.1	
Dilution Factor :	1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	40	J	37	J	45	J	24	J
Phenol	470	U	470	U	560	U	460	U
Acetophenone	470	U	470	U	17	J	14	J
4-Methylphenol	23	J	22	J	560	U	460	U
2,4-Dimethylphenol	13	J	15	J	23	J	460	U
Naphthalene	470	U	470	U	560	U	460	U
4-Chloroaniline	470	U	470	U	560	U	460	U
2-Methylnaphthalene	29	J	28	J	20	J	460	U
1,1'-Biphenyl	470	U	470	U	560	U	460	U
Acenaphthylene	14	J	13	J	22	J	15	J
Acenaphthene	16	J	470	U	560	U	24	J
Dibenzofuran	12	J	470	U	560	U	13	J
Fluorene	17	J	16	J	560	U	25	J
N-Nitrosodiphenylamine	470	U	470	U	560	U	460	U
Phenanthrene	250	J	230	J	160	J	170	J
Anthracene	48	J	45	J	56	J	42	J
Carbazole	54	J	42	J	37	J	20	J
Di-n-butylphthalate	470	U	470	U	250	J	460	U
Fluoranthene	550		500		370	J	470	
Pyrene	550		560		320	J	450	J
Butylbenzylphthalate	23	J	35	J	24	J	26	J
Benzo(a)anthracene	180	J	220	J	130	J	200	J
Chrysene	320	J	290	J	250	J	270	J
bis(2-Ethylhexyl)phthalate	470	U	470	U	870	U	460	U
Di-n-octylphthalate	470	UJ	470	UJ	560	U	30	J
Benzo(b)fluoranthene	420	J	370	J	290	J	260	J
Benzo(k)fluoranthene	270	J	280	J	300	J	290	J
Benzo(a)pyrene	270	J	250	J	230	J	210	J
Indeno(1,2,3-cd)pyrene	200	J	180	J	170	J	140	J
Dibenzo(a,h)anthracene	51	J	45	J	47	J	45	J
Benzo(g,h,i)perylene	500	J	450	J	190	J	150	J

**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29554**  
**PESTICIDE/PCB SEDIMENT RESULTS**

Sample Number :	E00J6		E00L9		E00K4		E00J2		E00J2DL		E00K3		E00K9	
Sampling Location :	X201		X202		X203		X204		X204		X205		X206	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :	11:30		13:20		15:45		09:00		09:00		15:15		16:15	
%Moisture :	63		29		21		50		50		46		40	
pH :	7.4		8.1		7.7		7.8		7.8		7.9		7.8	
Dilution Factor :	1.0		1.0		1.0		1.0		2.0		1.0		2.0	
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	4.6	U	2.4	U	2.2	U	3.4	U	6.8	U	3.2	U	7.1	J
beta-BHC	4.6	U	2.4	U	2.2	U	3.4	U	6.8	U	3.2	U	5.7	U
gamma-BHC (Lindane)	4.6	U	2.4	U	2.2	U	3.4	U	6.8	U	3.2	U	6.9	J
Heptachlor	4.6	U	2.4	U	2.2	U	3.4	U	6.8	U	3.8	J	5.7	U
Heptachlor epoxide	4.6	U	2.4	U	2.2	U	2.0	J	6.8	U	3.2	U	11	J
Dieldrin	10	J	4.7	U	4.2	U	6.6	U	13	U	8.1	J	11	U
4,4'-DDE	15	J	7.5		6.4		6.0	J	13	U	16	J	12	J
Endrin	8.9	U	4.7	U	4.2	U	6.6	U	13	U	11	J	11	U
4,4'-DDD	18	J	18		28		38	J	40	J	12	J	26	J
Endosulfan sulfate	11	J	4.7	U	4.2	U	6.6	U	13	U	7.8	J	11	U
4,4'-DDT	19	J	4.7	U	4.2	U	120	J	130	J	6.1	U	11	U
Endrin ketone	8.9	U	4.7	U	4.2	U	6.6	U	13	U	6.1	U	11	U
alpha-Chlordane	9.5	J	2.4	U	2.2	U	16	J	19	J	15	J	5.7	U
gamma-Chlordane	20	J	3.0		5.7		32	J	35	J	23	J	9.2	J

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**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29554**  
**PESTICIDE/PCB SEDIMENT RESULTS**

Sample Number :	E00L2	E00L2DL	E00L4	E00L4DL	E00L3	E00L6	E00L5							
Sampling Location :	X207	X207	X208	X208	X209	X210	X211							
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil	Soil							
Units :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg							
Date Sampled :	11/08/2001	11/08/2001	11/08/2001	11/08/2001	11/08/2001	11/08/2001	11/08/2001							
Time Sampled :	08:45	08:45	09:45	09:45	10:05	10:40	11:10							
%Moisture :	45	45	52	52	67	41	30							
pH :	7.8	7.8	7.6	7.6	7.5	7.2	7.8							
Dilution Factor :	1.0	5.0	1.0	10.0	1.0	1.0	1.0							
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	3.1	U	15	U	3.5	U	35	U	5.2	U	2.9	U	2.4	U
beta-BHC	17	J	15	U	3.5	U	35	U	5.2	U	2.9	U	2.4	U
gamma-BHC (Lindane)	4.6	J	15	U	3.5	U	35	U	5.2	U	2.9	U	2.4	U
Heptachlor	3.1	U	15	U	3.5	U	35	U	5.2	U	2.9	U	2.4	U
Heptachlor epoxide	3.1	U	15	U	3.5	U	35	U	5.2	U	2.9	U	4.6	J
Dieldrin	17	J	30	U	63	J	84	J	10	U	5.6	U	22	J
4,4'-DDE	23	J	23	J	81	J	100	J	23		10		25	J
Endrin	23	J	30	U	6.9	U	69	U	10	U	5.6	U	4.7	U
4,4'-DDD	100	J	110	J	640	J	610	J	46		5.6	U	20	J
Endosulfan sulfate	7.6	J	30	U	6.9	U	69	U	10	U	5.6	U	4.7	U
4,4'-DDT	100	J	99	J	140	J	150	J	10	U	5.6	U	15	J
Endrin ketone	6.0	U	30	U	24	J	69	U	10	U	5.6	U	4.7	U
alpha-Chlordane	3.1	U	15	U	3.5	U	35	U	5.2	U	4.0		8.9	J
gamma-Chlordane	24	J	28	J	3.5	U	120	J	9.9		13		19	J

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**TABLE - 2**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29554**  
**PESTICIDE/PCB SEDIMENT RESULTS**

Sample Number :	E00L5DL	E00K2	E00J8	E00J8DL	E00J9	E00J7						
Sampling Location :	X211	X212	X214	X214	X250	X215						
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil						
Units :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg						
Date Sampled :	11/08/2001	11/07/2001	11/07/2001	11/07/2001	11/07/2001	11/07/2001						
Time Sampled :	11:10	13:00	12:15	12:15	12:15	12:00						
%Moisture :	30	58	68	68	65	61						
pH :	7.8	7.1	7.3	7.3	7.0	7.4						
Dilution Factor :	2.0	1.0	1.0	5.0	1.0	1.0						
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	4.9	U	4.1	U	5.3	U	27	U	4.9	U	4.4	U
beta-BHC	4.9	U	15		15		27	U	4.9	U	4.4	U
gamma-BHC (Lindane)	4.9	U	4.1	U	5.3	U	27	U	4.9	U	4.4	U
Heptachlor	4.9	U	4.1	U	5.3	U	27	U	4.9	U	4.4	U
Heptachlor epoxide	6.7		4.1	U	5.3	U	27	U	4.9	U	4.4	U
Dieldrin	27		7.9	U	13		52	U	9.4	U	11	
4,4'-DDE	28		12		17		52	U	11		16	
Endrin	9.4	U	7.9	U	16		52	U	9.4	U	16	
4,4'-DDD	23		11		18		52	U	12		15	
Endosulfan sulfate	9.4	U	7.9	U	10	U	52	U	9.4	U	8.5	U
4,4'-DDT	16		7.9	U	10	U	52	U	9.4	U	8.5	U
Endrin ketone	9.4	U	7.9	U	10	U	52	U	9.4	U	8.5	U
alpha-Chlordane	9.7		8.1		12		27	U	9.5		11	
gamma-Chlordane	18		18		20		29		14		19	

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**TABLE - 3**  
**CLARK/BLEU ISLAND ANALYTICAL DATA (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**INORGANIC SOIL SAMPLE RESULTS**

Sample Number :	ME00L7		ME00H6		ME00H1		ME00H0		ME00H5		ME00G6		ME00G8		ME00G7	
Sampling Location :	X101		X102		X105		X110		X112		X113		X116		X117	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/08/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001	
Time Sampled :	12:20		15:00		12:45		12:20		14:35		11:30		11:40		11:40	
%Solids :	71.2		80.7		78.4		77.4		72.0		76.7		81.8		82.1	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	13200		7410		8390		13800		8640		8960		6180		6880	
ANTIMONY	1.2	J	1.8		1.3	J	2.3	J	0.69	UJ	1.6	J	1.1	J	1.2	J
ARSENIC	8.2		9.7		7.8		14.5		7.2		9.8		9.5		9.3	
BARIUM	108		193		93.9		192		118		107		48.1		58.5	
BERYLLIUM	0.68		0.51		0.57		0.83		0.45		0.43		0.40		0.39	
CADMIUM	0.11	U	5.0		0.95		0.87		0.48		0.29		0.33		0.31	
CALCIUM	4830		5550	J	16000		6920		8690		17900		24800		25000	
CHROMIUM	19.4		69.2	J	17.4		24.0		18.9		14.6		11.5		12.3	
COBALT	13.6		6.8		7.1		12.8		7.2		7.5		5.8		6.5	
COPPER	22.7		70.1		31.6	J	37.7	J	26.7	J	26.6	J	21.5	J	21.6	J
IRON	21200		14400		14800		29400		15000		16500		12300		12900	
LEAD	35.5		88.5		55.1		162		47.2		46.7		40.3		38.2	
MAGNESIUM	3570		2690	J	8090		5270		4260		10200		12800		13100	
MANGANESE	440		272	J	350		492		345		398		287		355	
MERCURY	0.070	U	0.27		0.060	U	1.5		0.070	U	0.11		0.060	U	0.060	U
NICKEL	21.5		18.0		18.0	J	27.0	J	19.6	J	17.5	J	13.8	J	14.3	J
POTASSIUM	1970		1460	J	1570		2230		1650		1790		1120		1250	
SELENIUM	0.62	U	0.55	U	0.56	U	0.67		0.80		0.57	U	0.54	U	0.54	U
SILVER	0.25	U	1.2		0.23	U	0.23	U	0.25	U	0.23	U	0.22	U	0.22	U
SODIUM	561		735		869		958		798		735		546		684	
THALLIUM	0.98	U	0.87	U	0.89	U	0.90	U	0.97	U	0.91	U	0.86	U	0.85	U
VANADIUM	27.5		19.9		22.2		35.2		20.2		21.2		16.3		16.7	
ZINC	85.1		195		142		252		93.4		84.7		71.6		73.3	
CYANIDE	0.13	UJ	0.54	J	0.12	U	0.12	U	0.23		0.37		0.12	U	0.12	U

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**TABLE - 3**  
**CLARK/BLUE ISLAND ANALYTICAL DATA (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**INORGANIC SOIL SAMPLE RESULTS**

Sample Number :	ME00G0		ME00H9		ME00G5		ME00G4		ME00G3		ME00G2		ME00H2		ME00H4	
Sampling Location :	X119		X122		X124		X125		X126		X128		X130		X132	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001	
Time Sampled :	09:20		16:35		10:30		10:15		10:00		09:45		13:45		14:15	
%Solids :	74.9		66.7		81.2		82.0		73.2		80.1		72.9		75.3	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	6510		10700		7340		7800		9330		7160		6490		9000	
ANTIMONY	1.2	J	1.3		1.8	J	0.68	J	2.4	J	1.0	J	1.3	J	3.3	J
ARSENIC	5.5		8.0		8.6		7.8		8.6		9.2		8.3		8.5	
BARIUM	187		602		185		147		1130		198		162		190	
BERYLLIUM	0.32		0.76		0.42		0.36		0.57		0.41		0.43		0.71	
CADMIUM	0.39		1.6		0.70		0.33		2.0		0.53		0.98		13.9	
CALCIUM	3390		24200	J	10800		2970		6700		4610		39600		32800	
CHROMIUM	11.7		21.2	J	18.7		12.8		99.6		13.7		17.3		167	
COBALT	6.3		9.6		6.5		5.4		7.7		8.1		6.3		8.3	
COPPER	20.3	J	45.3		21.1	J	17.6	J	44.2	J	27.4	J	33.3	J	148	J
IRON	11100		18400		15600		13100		16800		16400		16000		16900	
LEAD	69.1		206		100		60.6		705		301		164		186	
MAGNESIUM	1770		11800	J	4660		1690		3370		2540		20600		15900	
MANGANESE	489		474	J	354		435		439		358		599		474	
MERCURY	0.070	U	0.18		0.080		0.060	U	0.15		0.20		0.11		0.80	
NICKEL	10.5	J	26.3		15.6	J	12.0	J	19.3	J	17.0	J	16.8	J	34.8	J
POTASSIUM	1150		2220	J	1230		792		993		1160		1370		1640	
SELENIUM	0.59	U	0.70		0.54	U	0.54	U	0.93		0.55	U	0.60	U	0.60	
SILVER	0.24	U	0.27	U	0.22	U	0.22	U	0.32		0.22	U	0.25	U	4.6	
SODIUM	648		1050		720		699		753		827		690		842	
THALLIUM	0.93	U	1.0	U	0.86	U	0.85	U	0.96	U	0.87	U	0.96	U	0.93	U
VANADIUM	17.0		24.7		19.0		22.3		23.5		22.2		20.0		20.2	
ZINC	106		372		132		76.3		314		183		187		414	
CYANIDE	0.13	U	0.14	UJ	0.12	U	0.12	U	0.13	U	0.20		0.19		2.3	

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**TABLE - 3**  
**CLARK/BLEU ISLAND ANALYTICAL DATA (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**INORGANIC SOIL SAMPLE RESULTS**

Sample Number :	ME00H3		ME00H8		ME00H7		ME00G9		ME00J0		ME00L0	
Sampling Location :	X133		X136		X139		X143		X144		X145	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/08/2001	
Time Sampled :	14:05		15:50		15:20		12:00		17:00		08:05	
%Solids :	78.2		73.7		81.7		77.2		69.4		69.3	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	9570		10600		7690		7920		11400		7450	
ANTIMONY	1.4	J	0.77		0.61	U	1.2	J	3.3		0.72	UJ
ARSENIC	10.0		9.3		7.7		9.2		18.0		6	
BARIUM	132		123		78.6		116		215		73.9	
BERYLLIUM	0.56		0.59		0.48		0.43		0.70		0.49	
CADMIUM	1.4		0.87		0.68		0.51		1.6		0.51	
CALCIUM	19400		8850	J	7110	J	4280		11300	J	24700	
CHROMIUM	30.5		20.1	J	14.7	J	30.5		76.9	J	14.5	
COBALT	10.1		12.4		8.8		8.6		12.3		7.9	
COPPER	40.6	J	232		22.0		27.2	J	119		28.8	
IRON	19600		18800		15500		14300		29300		16200	
LEAD	145		88.6		48.6		88.7		450		59.9	
MAGNESIUM	9930		5400	J	4010	J	2380		6150	J	13100	
MANGANESE	404		905	J	381	J	431		658	J	712	
MERCURY	0.32		0.10		0.060	U	0.14		0.51		0.07	U
NICKEL	32.4	J	31.3		16.6		15.7	J	39.1		19.5	
POTASSIUM	1530		2500	J	1450	J	1280		2390	J	1670	
SELENIUM	0.56	U	0.71		0.54	U	0.57	U	0.63	U	0.63	U
SILVER	0.23	U	0.24	U	0.22	U	0.23	U	0.26	U	0.26	U
SODIUM	776		956		765		844		1040		607	
THALLIUM	0.90	U	0.95	U	0.86	U	0.91	U	1.0	U	1	U
VANADIUM	22.0		24.5		19.9		24.2		27.0		18.9	
ZINC	217		219		96.4		127		458		136	
CYANIDE	0.12	U	0.13	UJ	2.7	J	0.12	U	0.14	UJ	0.14	UJ

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**TABLE - 3**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SOIL SAMPLE RESULTS**

Sample Number :	E00L7		E00H6		E00H1		E00H0		E00H5		E00G6		E00G7		E00G8		E00G0	
Sampling Location :	X101		X102		X105		X110		X112		X113		X117		X118		X119	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/08/2001		11/6/01		11/6/01		11/6/01		11/6/01		11/6/01		11/6/01		11/6/01		11/6/01	
Time Sampled :	12:20		15:00		12:45		12:20		14:35		11:30		11:40		11:40		09:20	
%Moisture :	28		18		21		23		28		23		19		19		25	
pH :	6.3		7.0		7.5		7.7		7.3		7.4		7.5		7.5		7.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
Semivolatle Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	11	J	400	U	420	U	430	U	460	U	430	U	410	U	410	U	440	U
Phenol	460	U	400	U	41	J	430	U	460	U	430	U	410	U	410	U	440	U
Acetophenone	460	U	400	U	420	U	430	U	460	U	430	U	410	U	410	U	440	U
4-Methylphenol	460	U	400	U	420	U	430	U	460	U	430	U	410	U	410	U	440	U
Naphthalene	460	U	70	J	18	J	430	U	460	U	430	U	410	U	10	J	440	U
2-Methylnaphthalene	460	U	46	J	35	J	430	U	460	U	430	U	410	U	410	U	440	U
Hexachlorocyclopentadiene	460	UJ	400	R	420	R	430	R	460	R	430	R	410	R	410	R	440	R
1,1'-Biphenyl	460	U	10	J	420	U	430	U	460	U	430	U	410	U	410	U	440	U
Acenaphthylene	460	U	39	J	14	J	29	J	460	U	430	U	410	U	410	U	440	U
Acenaphthene	460	U	28	J	19	J	430	U	460	U	430	U	410	U	32	J	20	J
Dibenzofuran	460	U	34	J	18	J	430	U	460	U	430	U	410	U	17	J	12	J
Fluorene	460	U	35	J	21	J	430	U	460	U	430	U	19	J	30	J	21	J
4-Nitroaniline	1200	U	1000	U	1100	U	1100	U	1200	U	1100	U	1000	U	1000	U	1100	U
Phenanthrene	30	J	400	U	260	J	110	J	71	J	52	J	130	J	370	J	350	J
Anthracene	460	U	92	J	62	J	36	J	460	U	10	J	32	J	63	J	39	J
Carbazole	460	U	42	J	16	J	12	J	460	U	430	U	12	J	41	J	47	J
Di-n-butylphthalate	460	U	400	U	15	J	430	U	460	U	430	U	410	U	410	U	440	U
Fluoranthene	77	J	560	U	560	U	320	J	170	J	140	J	210	J	620	U	690	U
Pyrene	63	J	450	U	510	U	340	J	150	J	130	J	170	J	460	U	520	U
Butylbenzylphthalate	460	U	17	J	29	J	65	J	18	J	11	J	410	U	14	J	440	U
Benzo(a)anthracene	31	J	250	J	260	J	180	J	65	J	61	J	88	J	230	J	220	J
Chrysene	49	J	320	J	300	J	230	J	100	J	93	J	120	J	290	J	330	J
Di-n-octylphthalate	460	U	400	U	420	U	430	U	460	U	430	U	410	U	13	J	440	U
Benzo(b)fluoranthene	55	J	300	J	270	J	220	J	100	J	96	J	110	J	300	J	330	J
Benzo(k)fluoranthene	45	J	230	J	250	J	170	J	110	J	80	J	94	J	200	J	290	J
Benzo(a)pyrene	33	J	270	J	270	J	240	J	86	J	79	J	92	J	240	J	280	J
Indeno(1,2,3-cd)pyrene	26	J	170	J	160	J	140	J	52	J	59	J	59	J	150	J	200	J
Dibenzo(a,h)anthracene	460	U	62	J	68	J	75	J	22	J	21	J	21	J	70	J	64	J
Benzo(g,h,i)perylene	460	U	160	J	170	J	150	J	79	J	59	J	52	J	140	J	140	J

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**TABLE - 3**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SOIL SAMPLE RESULTS**

Sample Number :	E00L1	E00H9	E00G5	E00G4	E00G3	E00G2	E00H2	E00H4	E00H3							
Sampling Location :	X120	X122	X124	X125	X126	X128	X130	X132	X133							
Matrix :	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil							
Units :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg							
Date Sampled :	11/08/2001	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01							
Time Sampled :	08:25	16:35	10:30	10:15	10:00	09:45	13:45	14:15	14:05							
%Moisture :	24	31	16	18	28	21	34	26	24							
pH :	8.7	7.7	7.4	6.8	6.7	7.2	7.4	7.5	7.6							
Dilution Factor :	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0							
Semivolatle Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	14	J	180	J	390	U	400	U	460	U	420	UJ	500	U	450	U
Phenol	430	U	480	U	390	U	400	U	460	U	420	U	500	U	450	U
Acetophenone	17	J	480	U	390	U	400	U	460	U	420	U	500	U	450	U
4-Methylphenol	430	U	480	U	390	U	400	U	460	U	420	U	500	U	18	J
Naphthalene	12	J	480	U	390	U	400	U	10	J	420	U	20	J	97	J
2-Methylnaphthalene	23	J	23	J	12	J	400	U	13	J	420	U	29	J	61	J
Hexachlorocyclopentadiene	430	UJ	480	R	390	R	400	R	460	R	420	R	500	R	450	R
1,1'-Biphenyl	430	U	480	U	390	U	400	U	460	U	420	U	500	U	20	J
Acenaphthylene	17	J	91	J	390	U	400	U	22	J	420	U	24	J	100	J
Acenaphthene	430	U	480	U	390	U	400	U	23	J	75	J	19	J	46	J
Dibenzofuran	13	J	480	U	390	U	400	U	13	J	26	J	15	J	62	J
Fluorene	430	U	13	J	390	U	400	U	28	J	81	J	17	J	78	J
4-Nitroaniline	1100	U	1200	U	990	U	1000	U	1200	U	1100	U	1300	U	1100	U
Phenanthrene	73	J	160	J	87	J	72	J	530		860		190	J	750	
Anthracene	27	J	79	J	15	J	14	J	77	J	220	J	43	J	210	J
Carbazole	13	J	35	J	390	U	400	U	55	J	120	J	25	J	79	J
Di-n-butylphthalate	430	U	480	U	390	U	400	U	460	U	420	U	60	J	450	U
Fluoranthene	210	J	580		170	J	180	J	1200		1100		370	J	1300	
Pyrene	170	J	460	J	150	J	160	J	880		910		340	J	1200	
Butylbenzylphthalate	14	J	28	J	390	U	15	J	41	J	12	J	89	J	33	J
Benzo(a)anthracene	96	J	310	J	73	J	75	J	430	J	400	J	170	J	630	
Chrysene	140	J	380	J	110	J	110	J	620		480		240	J	790	
Di-n-octylphthalate	150	J	480	U	390	U	400	U	460	U	420	U	56	J	450	U
Benzo(b)fluoranthene	160	J	400	J	100	J	110	J	720		360	J	250	J	740	
Benzo(k)fluoranthene	130	J	290	J	84	J	90	J	500		290	J	180	J	770	
Benzo(a)pyrene	110	J	290	J	86	J	92	J	530		320	J	200	J	720	
Indeno(1,2,3-cd)pyrene	76	J	180	J	53	J	63	J	320	J	170	J	140	J	410	J
Dibenzo(a,h)anthracene	42	J	74	J	20	J	21	J	100	J	63	J	57	J	140	J
Benzo(g,h,i)perylene	100	J	140	J	48	J	75	J	290	J	160	J	170	J	420	J

**TABLE - 3**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SOIL SAMPLE RESULTS**

Sample Number :	E00H8	E00H7	E00G9	E00J0	E00L0					
Sampling Location :	X136	X139	X143	X144	X145					
Matrix :	Soil	Soil	Soil	Soil	Soil					
Units :	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg					
Date Sampled :	11/6/01	11/6/01	11/6/01	11/6/01	11/08/2001					
Time Sampled :	15:50	15:20	12:00	17:00	08:05					
%Moisture :	27	19	25	31	31					
pH :	7.4	7.2	6.9	7.6	7.8					
Dilution Factor :	1.0	1.0	1.0	1.0	1.0					
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Benzaldehyde	450	U	410	U	440	U	480	U	230	J
Phenol	450	U	410	U	440	U	480	U	480	U
Acetophenone	450	U	410	U	440	U	480	U	480	U
4-Methylphenol	450	U	190	J	440	U	480	U	480	U
Naphthalene	450	U	410	U	440	U	480	U	480	U
2-Methylnaphthalene	450	U	410	U	440	U	480	U	480	U
Hexachlorocyclopentadiene	450	R	410	R	440	R	480	R	480	UJ
1,1'-Biphenyl	450	U	410	U	440	U	480	U	480	U
Acenaphthylene	14	J	30	J	15	J	12	J	480	U
Acenaphthene	450	U	27	J	440	U	480	U	480	U
Dibenzofuran	450	U	14	J	440	U	480	U	480	U
Fluorene	450	U	40	J	440	U	480	U	480	U
4-Nitroaniline	1100	U	1000	U	1100	U	270	J	1200	U
Phenanthrene	100	J	540	J	150	J	63	J	81	J
Anthracene	23	J	98	J	28	J	22	J	14	J
Carbazole	450	U	60	J	18	J	13	J	17	J
Di-n-butylphthalate	450	U	410	U	18	J	39	J	480	U
Fluoranthene	240	J	1100	J	330	J	150	J	150	J
Pyrene	270	J	820	J	260	J	130	J	130	J
Butylbenzylphthalate	19	J	11	J	21	J	20	J	42	J
Benzo(a)anthracene	130	J	380	J	140	J	70	J	69	J
Chrysene	170	J	530	J	180	J	100	J	93	J
Di-n-octylphthalate	450	U	410	U	440	U	480	U	130	J
Benzo(b)fluoranthene	170	J	470	J	200	J	88	J	84	J
Benzo(k)fluoranthene	130	J	440	J	140	J	95	J	97	J
Benzo(a)pyrene	140	J	460	J	170	J	83	J	80	J
Indeno(1,2,3-cd)pyrene	93	J	300	J	120	J	52	J	51	J
Dibenzo(a,h)anthracene	36	J	110	J	61	J	20	J	22	J
Benzo(g,h,i)perylene	98	J	420	J	99	J	61	J	480	U

**TABLE - 4**  
**CLARK/BLEU ISLAND ANALYTICAL DATA (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**INORGANIC SURFACE WATER SAMPLE RESULTS**

Sample Number :	ME00J5		ME00L8		ME00K5		ME00J3		ME00K6		ME00K7		ME00J4		ME00K8	
Sampling Location :	S101		S102		S103		S104		S106		S150		S114		FIELD BLANK	
Matrix :	Water		Water		Water		Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :	11:15		13:20		15:45		09:00		16:15		16:15		10:40		17:00	
%Solids :	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	285	J	136	UJ	176	J	1040	J	343	J	205	J	517	J	136	UJ
ARSENIC	6.1	U	6.1	U	6.1	U	6.1	U	7.4		6.1	U	6.1	U	6.1	U
BARIUM	24.4		53.5		59.3		84.8		74.2		72.7		28.4		4.5	U
CALCIUM	68700		118000		127000		140000		149000		149000		71100		1670	U
CHROMIUM	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U	2.2		1.6	U
COPPER	10.1		1.6	U	2.8		3.3		5.7		3.4		20.7		1.6	U
IRON	391		1610		619		395		1690		1370		754		49.6	U
LEAD	2.4		2.4	U	2.4	U	2.4	U	8.7		6.7		5.5		2.4	U
MAGNESIUM	25800		45200		51100		55400		46400		46300		27300		114	U
MANGANESE	31.6		242		62.2		111		551		506		40.4		5.2	U
NICKEL	17.7		3.0	U	3.0	U	3.0	U	7.5		6.6		25.1		3.0	U
POTASSIUM	8260		4330		5680		10600	J	10500	J	10500	J	8390		33.4	U
SODIUM	103000	J	77100	J	108000	J	193000	J	177000	J	180000	J	103000	J	154	U
THALLIUM	4.6	U	4.6	U	4.6	U	4.6	U	4.6	U	4.6	U	4.6	U	5.1	
VANADIUM	2.0		1.8	U	1.8	U	1.8	U	1.8		1.8	U	2.0		1.8	U
ZINC	33.1		12.6	U	12.6	U	32.2		88.2		71.7		39.5		12.6	U

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**TABLE - 4**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**VOC SURFACE WATER ANALYTICAL RESULTS**

Sample Number :	E00J5	E00L8	E00K5	E00J3	E00K6	E00K7	E00J4	E00K8	E00K0	
Sampling Location :	S101	S102	S103	S104	S106	S150	S114	FIELD BLANK	TRIP BLANK	
Matrix :	Water	Water	Water	Water	Water	Water	Water	Water	Water	
Units :	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Date Sampled :	11/7/01	11/8/01	11/7/01	11/7/01	11/7/01	11/7/01	11/7/01	11/7/01	11/7/01	
Time Sampled :	11:15	13:20	15:45	09:00	16:15	16:15	10:40	17:00	15:48	
%Moisture :	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
pH :										
Dilution Factor :	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Acetone	10	U	10	U	9	J	10	U	10	U
cis-1,2-Dichloroethene	10	U	10	U	1	J	10	U	10	U

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**TABLE - 4**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**SVOC SURFACE WATER RESULTS**

Sample Number :	E00J5		E00L8		E00K5		E00K5RE		E00J3		E00K6		E00K7		E00J4		E00K8	
Sampling Location :	S101		S102		S103		S103		S104		S106		S150		S114		FIELD BLANK	
Matrix :	Water		Water		Water		Water		Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	11/7/01		11/8/01		11/7/01		11/7/01		11/7/01		11/7/01		11/7/01		11/7/01		11/7/01	
Time Sampled :	11:15		13:20		15:45		15:45		09:00		16:15		16:15		10:40		17:30	
%Moisture :	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
2,4,6-Trichlorophenol	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	25	U	25	U	25	UJ	25	R	25	U	25	U	25	U	25	U	25	U
1,1'-Biphenyl	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	25	U	25	U	25	UJ	25	R	25	U	25	U	25	U	25	U	25	U
Dimethylphthalate	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
Acenaphthylene	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
3-Nitroaniline	25	U	25	U	25	UJ	25	R	25	U	25	U	25	U	25	U	25	U
Acenaphthene	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	25	UJ	25	UJ	25	UJ	25	R	25	UJ	25	UJ	25	UJ	25	UJ	25	UJ
4-Nitrophenol	25	U	25	U	25	UJ	25	R	25	U	25	U	25	U	25	U	25	U
Dibenzofuran	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
Diethylphthalate	10	U	10	U	0.7	J	0.5	J	10	U	10	U	10	U	10	U	10	U
Fluorene	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenyl ether	10	U	10	U	10	UJ	10	R	10	U	10	U	10	U	10	U	10	U
4-Nitroaniline	25	U	25	U	25	UJ	25	R	25	U	25	U	25	U	25	U	25	U
Atrazine	0.4	J	10	U	10	U	10	UJ	10	U	10	U	10	U	0.5	J	10	U
Fluoranthene	10	U	0.2	J	10	U	10	UJ	10	U	10	U	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	10	U	10	U	10	U	0.9	J	10	U	10	U	10	U	10	U	10	U

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**TABLE - 4**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS (QUALIFIED)**  
**NOVEMBER 2001 INVESTIGATION**  
**CASE #29954**  
**PESTICIDE/PCB SURFACE WATER RESULTS**

Sample Number :	E00J5	E00L8	E00K5	E00J3	E00K6	E00K7	E00J4	E00K8								
Sampling Location :	S101	S102	S103	S104	S106	S150	S114	FIELD BLANK								
Matrix :	Water	Water	Water	Water	Water	Water	Water	Water								
Units :	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L								
Date Sampled :	11/7/01	11/8/01	11/7/01	11/7/01	11/7/01	11/7/01	11/7/01	11/7/01								
Time Sampled :	11:15	13:20	15:45	09:00	16:15	16:15	10:40	17:00								
%Moisture :	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
Dilution Factor :	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0								
Pesticide/PCB Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
gamma-BHC (Lindane)	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Heptachlor	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Aldrin	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan I	0.050	U	0.050	U	0.073		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Dieldrin	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
Endrin	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDD	0.10	U	0.10	U	0.086	J	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDT	0.10	U	0.10	U	0.046	J	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
alpha-Chlordane	0.050	U	0.050	U	0.065		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
gamma-Chlordane	0.050	U	0.050	U	0.019	J	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**INORGANIC SEDIMENT RESULTS**

		Cal Sag Bkg		Mosq Creek Bkg		Stony Creek Bkg		Stony Creek				Mosquito Creek			
Sample Number :		ME00J6		ME00L9		ME00K4		ME00J2		ME00K3		ME00K9		ME00L2	
Sampling Location :		X201		X202		X203		X204		X205		X206		X207	
Matrix :		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	Soil SCDM (ppm)	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :		11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/08/2001	
Time Sampled :		11:30		13:20		15:45		09:00		15:15		16:15		08:45	
%Solids :		44.3		77.7		80.2		51.8		50.9		52.3		45.0	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	31	1.9		0.64	UJ	0.62	U	2.6		3.9		5.5		4.9	J
ARSENIC	0.43	5.3		5.7		10.2						23.0		54.0	
BARIUM	5500	152		43.0		39.7		356		202				150	
CADMIUM	39	2.1		0.10	U	0.26		1.2		5.9		0.81		0.60	
CHROMIUM	230	42.2	J	9.3		10.3	J							51.7	
COPPER	-									157				90.4	
IRON	-											77700		88400	
LEAD	-	183		24.4		32.0		471		670		614		788	
MERCURY	23	0.26		0.060	U	0.060	U	4.4		1.2		0.16		1.3	
NICKEL	1600	19.6		16.5		22.7									
SELENIUM	390	1.0		0.57	U	0.55	U	1.8							
SILVER	390	1.5		0.23	U	0.22	U	8.0		0.60					
SODIUM	-	964		520		776									
THALLIUM	-	1.6	U	0.90	U	0.87	U							3.6	
VANADIUM	550	12.0		14.3		13.0								55.3	
ZINC	23000	533		60.2		142				771		1860		1580	
CYANIDE	1600	0.21	UJ	0.12	UJ	0.12	UJ							0.27	J

**23.0** Bold numbers exceed soil SCDM. Only applies to Mosquito Creek (Intermittent Stream).

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**INORGANIC SEDIMENT RESULTS**

Mosquito Creek									
Sample Number :		ME00L4		ME00L3		ME00L6		ME00L5	
Sampling Location :		X208		X209		X210		X211	
Matrix :		Soil		Soil		Soil		Soil	
Units :	Soil SCDM	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	(ppm)	11/08/2001		11/08/2001		11/08/2001		11/08/2001	
Time Sampled :		09:45		10:05		10:40		11:10	
%Solids :		58.0		31.8		40.4		68.7	
Dilution Factor :		1.0		1.0		1.0		1.0	
ANALYTE		Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	31	17.0	J	3.8	J				
ARSENIC	<b>0.43</b>								
BARIUM	5500	317							
CADMIUM	<b>39</b>	<b>14.2</b>		<b>2.1</b>		<b>2.0</b>		<b>0.33</b>	
CHROMIUM	230	67.3		128		38.2			
COPPER	—	<b>402</b>		<b>114</b>		<b>60.5</b>			
IRON	—								
LEAD	—	<b>269</b>		<b>214</b>		<b>213</b>		<b>182</b>	
MERCURY	23	0.14		0.25		0.16			
NICKEL	<b>1600</b>	<b>57.0</b>		<b>51.2</b>		<b>101</b>			
SELENIUM	390			1.6					
SILVER	<b>390</b>	<b>0.42</b>							
SODIUM	—	2400		1820					
THALLIUM	—	1.3							
VANADIUM	550			78.9		61.4			
ZINC	<b>23000</b>	<b>1090</b>		<b>723</b>		<b>455</b>		<b>424</b>	
CYANIDE	1600	0.63	J			2.9	J		

**23.0** Bold numbers exceed soil SCDM. Only applies to Mosquito Creek (Intermittent Stream).

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND**  
**NOVEMBER 2001 INVESTIGATION**  
**VOC SEDIMENT RESULTS**

	Cal Sag Bkg		Mosq Creek Bkg		Stony Creek Bkg											
Sample Number :	E00J6		E00L9		E00K4		E00K9		E00L3		E00L5		E00K1		E00J7	
Sampling Location :	X201		X202		X203		X206		X209		X211		X213		X215	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :	11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/08/2001		11/08/2001		11/07/2001		11/07/2001	
Time Sampled :	11:30		13:20		15:45		16:15		10:05		11:10		12:30		12:00	
%Moisture :	63		29		21		40		67		30		0		61	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
Volatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Acetone	19	J	14	UJ	10	J	34		33		21	J			28	
Chlorobenzene	27	U	14	U	13	U							35			
1,4-Dichlorobenzene	27	U	14	U	13	U							31			

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**SVOC SEDIMENT RESULTS**

		Cal Sag Background		Mosq Creek Bkg		Stony Creek Bkg		Stony Creek			
Sample Number :	Soil SCDM (ppb)	E00J6	E00J6DL	E00L9		E00K4		E00J2		E00K3	
Sampling Location :		X201	X201	X202		X203		X204		X205	
Matrix :		Soil	Soil	Soil		Soil		Soil		Soil	
Units :		ug/Kg	ug/Kg	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		11/07/2001	11/07/2001	11/08/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :		11:30	11:30	13:20		15:45		09:00		15:15	
%Moisture :		63	63	29		21		50		46	
pH :		7.4	7.4	8.1		7.7		7.8		7.9	
Dilution Factor :		1.0	2.0	1.0		1.0		1.0		1.0	
Semivolatile Compound		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Phenanthrene	--	2800		2900		170	J	140	J	4100	
Anthracene	23,000,000	690	J	770	J	42	J	21	J	1100	
Fluoranthene	--	5600		6400		470		150	J	6200	
Pyrene	2,300,000	5800		5600		450	J	160	J	8500	
Butylbenzylphthalate	16,000,000	280	J	290	J	26	J	420	U	910	
Benzo(a)anthracene	800	3300		3200		200	J	56	J	3700	
Chrysene	88,000	3200		3600		270	J	110	J	3200	
bis(2-Ethylhexyl)phthalate	46,000	9600		11000		460	U	440	U	4600	
Benzo(b)fluoranthene	--	5300		5500		260	J	110	J	4500	J
Benzo(k)fluoranthene	8,800	2200		2600		290	J	51	J	3000	J
Benzo(a)pyrene	88	3000		3500		210	J	60	J	3400	J
Indeno(1,2,3-cd)pyrene	880	1500		1500	J	140	J	31	J	1600	J
Benzo(g,h,i)perylene	--	1300		1300	J	150	J	51	J	1400	J

**3900** Concentration exceeds USEPA Soil Removal Action Level (RAL)

**19000** Bold Concentration exceeds Soil Chemical Data Matrix (SCDM)

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**SVOC SEDIMENT RESULTS**

		Stony Creek		Mosquito Creek							
Sample Number :		E00K3DL		E00L4		E00L3		E00L5		E00L5RE	
Sampling Location :		X205		X208		X209		X211		X211	
Matrix :		Soil		Soil		Soil		Soil		Soil	
Units :	Soil SCDM (ppb)	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		11/07/2001		11/08/2001		11/08/2001		11/08/2001		11/08/2001	
Time Sampled :		15:15		09:45		10:05		11:10		11:10	
%Moisture :		46		52		67		30		30	
pH :		7.9		7.6		7.5		7.8		7.8	
Dilution Factor :		3.0		10.0		1.0		1.0		1.0	
Semivolatile Compound		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Phenanthrene	--	5300		14000							
<b>Anthracene</b>	<b>23,000,000</b>	<b>1400</b>	J								
Fluoranthene	--	9800		40000							
<b>Pyrene</b>	<b>2,300,000</b>	<b>10000</b>		<b>43000</b>		<b>1300</b>		<b>550</b>		<b>560</b>	
Butylbenzylphthalate	16,000,000										
<b>Benzo(a)anthracene</b>	<b>800</b>	<b>3300</b>		<b>19000</b>							
Chrysene	88,000	4300		24000							
<b>bis(2-Ethylhexyl)phthalate</b>	<b>46,000</b>	<b>5800</b>		<b>39000</b>							
Benzo(b)fluoranthene	--	4500	J	32000		1300					
<b>Benzo(k)fluoranthene</b>	<b>8,800</b>	<b>4000</b>	J	<b>30000</b>							
Benzo(a)pyrene	88	4000	J	<b>39000</b>							
<b>Indeno(1,2,3-cd)pyrene</b>	<b>880</b>	<b>2100</b>	J	<b>20000</b>	J						
Benzo(g,h,i)perylene	--	1900	J	18000							

**3900** Concentration exceeds USEPA Soil Removal Action Level (RAL)

**19000** Bold Concentration exceeds Soil Chemical Data Matrix (SCDM)

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**PESTICIDE/PCB SEDIMENT RESULTS**

		Cal Sag Bkg		Mosq Creek Bkg		Stony Creek Bkg		Stony Creek					
Sample Number :	Soil SCDM (ppm)	E00J6		E00L9		E00K4		E00J2		E00J2DL		E00K3	
Sampling Location :		X201		X202		X203		X204		X204		X205	
Matrix :		Soil		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :		11:30		13:20		15:45		09:00		09:00		15:15	
%Moisture :		63		29		21		50		50		46	
pH :		7.4		8.1		7.7		7.8		7.8		7.9	
Dilution Factor :		1.0		1.0		1.0		1.0		2.0		1.0	
Pesticide/PCB Compound		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	0.1	4.6	U	2.4	U	2.2	U						
beta-BHC	0.35	4.6	U	2.4	U	2.2	U						
gamma-BHC (Lindane)	0.49	4.6	U	2.4	U	2.2	U						
Heptachlor	0.14	4.6	U	2.4	U	2.2	U					3.8	J
Heptachlor epoxide	0.07	4.6	U	2.4	U	2.2	U						
Dieldrin	0.04	10	J	4.7	U	4.2	U					8.1	J
4,4'-DDE	1.9	15	J	7.5		6.4							
Endrin	23	8.9	U	4.7	U	4.2	U					11	J
4,4'-DDD	2.7	18	J	18		28							
Endosulfan sulfate	470	11	J	4.7	U	4.2	U					7.8	J
4,4'-DDT	1.9	19	J	4.7	U	4.2	U	120	J	130	J		
Endrin ketone	23	8.9	U	4.7	U	4.2	U						
alpha-Chlordane	1.8	9.5	J	2.4	U	2.2	U	16	J	19	J	15	J
gamma-Chlordane	1.8	20	J	3.0		5.7							

4.6 Bold text exceeds SCDM. Only applies to Mosquito Creek samples (Intermittent Stream).

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**PESTICIDE/PCB SEDIMENT RESULTS**

Mosquito Creek													
Sample Number :	Soil SCDM (ppm)	E00K9		E00L2		E00L2DL		E00L4		E00L4DL		E00L3	
Sampling Location :		X206		X207		X207		X208		X208		X209	
Matrix :		Soil		Soil		Soil		Soil		Soil		Soil	
Units :		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		11/07/2001		11/08/2001		11/08/2001		11/08/2001		11/08/2001		11/08/2001	
Time Sampled :		16:15		08:45		08:45		09:45		09:45		10:05	
%Moisture :		40		45		45		52		52		67	
pH :		7.8		7.8		7.8		7.6		7.6		7.5	
Dilution Factor :		2.0		1.0		5.0		1.0		10.0		1.0	
Pesticide/PCB Compound		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	0.1	7.1	J										
beta-BHC	0.35			17	J								
gamma-BHC (Lindane)	0.49	6.9	J	4.6	J								
Heptachlor	0.14												
Heptachlor epoxide	0.07	11	J										
Dieldrin	0.04			17	J			63	J	84	J		
4,4'-DDE	1.9							81	J	100	J	23	
Endrin	23			23	J								
4,4'-DDD	2.7							640	J	610	J		
Endosulfan sulfate	470			7.6	J								
4,4'-DDT	1.9			100	J		99 J	140	J	150	J		
Endrin ketone	23							24	J				
alpha-Chlordane	1.8												
gamma-Chlordane	1.8									120	J	9.9	

**4.6** Bold text exceeds SCDM. Only applies to Mosquito Creek samples (Intermittent Stream).

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**TABLE - 5**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**PESTICIDE/PCB SEDIMENT RESULTS**

		Mosquito Creek						Cal Sag Channel					
Sample Number :		E00L6		E00L5		E00L5DL		E00K2		E00J8		E00J7	
Sampling Location :		X210		X211		X211		X212		X214		X215	
Matrix :		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	Soil SCDM (ppm)	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :		11/08/2001		11/08/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :		10:40		11:10		11:10		13:00		12:15		12:00	
%Moisture :		41		30		30		58		68		61	
pH :		7.2		7.8		7.8		7.1		7.3		7.4	
Dilution Factor :		1.0		1.0		2.0		1.0		1.0		1.0	
Pesticide/PCB Compound		Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
alpha-BHC	0.1												
beta-BHC	0.35							15		15			
gamma-BHC (Lindane)	0.49												
Heptachlor	0.14												
Heptachlor epoxide	0.07			4.6	J	6.7							
Dieldrin	0.04			22	J	27							
4,4'-DDE	1.9					28							
Endrin	23									16		16	
4,4'-DDD	2.7												
Endosulfan sulfate	470												
4,4'-DDT	1.9			15	J	16							
Endrin ketone	23												
alpha-Chlordane	1.8	4.0		8.9	J	9.7							
gamma-Chlordane	1.8	13				18							

**4.6** Bold text exceeds SCDM. Only applies to Mosquito Creek samples (Intermittent Stream).

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**TABLE - 6**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**INORGANIC SOIL SAMPLE RESULTS**

Sample Number :	ME00L7		ME00H6		ME00H1		ME00H0		ME00H5		ME00G6		ME00G8		ME00G7	
Sampling Location :	X101		X102		X105		X110		X112		X113		X116		X117	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/08/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001	
Time Sampled :	12:20		15:00		12:45		12:20		14:35		11:30		11:40		11:40	
%Solids :	71.2		80.7		78.4		77.4		72.0		76.7		81.8		82.1	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
BARIUM	108															
CADMIUM	0.11	U	5.0		0.95		0.87		0.48		0.29		0.33		0.31	
CALCIUM	4830				16000						17900		24800		25000	
CHROMIUM	19.4															
COPPER	22.7		70.1													
LEAD	35.5						162									
MAGNESIUM	3570												12800		13100	
MERCURY	0.070	U	0.27				1.5				0.11					
SELENIUM	0.62	U					0.67		0.80							
SILVER	0.25	U	1.2													
ZINC	85.1															
CYANIDE	0.13	UJ							0.23		0.37					

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**TABLE - 6**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**INORGANIC SOIL SAMPLE RESULTS**

Sample Number :	ME00G0		ME00H9		ME00G5		ME00G4		ME00G3		ME00G2		ME00H2		ME00H4			
Sampling Location :	X119		X122		X124		X125		X126		X128		X130		X132			
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil			
Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg			
Date Sampled :	11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001			
Time Sampled :	09:20		16:35		10:30		10:15		10:00		09:45		13:45		14:15			
%Solids :	74.9		66.7		81.2		82.0		73.2		80.1		72.9		75.3			
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag		
BARIUM	0.39		602		0.70		0.33		1130		0.53		0.98		13.9			
CADMIUM			1.6						2.0						39600		32800	
CALCIUM									99.6								167	
CHROMIUM																		
COPPER																		
LEAD			206						705						301		164	186
MAGNESIUM																	20600	15900
MERCURY			0.18						0.15						0.20		0.11	0.80
SELENIUM			0.70						0.93									0.60
SILVER									0.32									4.6
ZINC		372	314		414													
CYANIDE					0.20		0.19		2.3									

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**TABLE - 6**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**INORGANIC SOIL SAMPLE RESULTS**

Sample Number :	ME00H3		ME00H8		ME00H7		ME00G9		ME00J0		ME00L0	
Sampling Location :	X133		X136		X139		X143		X144		X145	
Matrix :	Soil		Soil		Soil		Soil		Soil		Soil	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/06/2001		11/08/2001	
Time Sampled :	14:05		15:50		15:20		12:00		17:00		08:05	
%Solids :	78.2		73.7		81.7		77.2		69.4		69.3	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
BARIUM												
CADMIUM	1.4		0.87		0.68		0.51		1.6		0.51	
CALCIUM	19400										24700	
CHROMIUM												
COPPER			232						119			
LEAD	145								450			
MAGNESIUM											13100	
MERCURY	0.32		0.10				0.14		0.51			
SELENIUM			0.71									
SILVER												
ZINC									458			
CYANIDE					2.7	J						

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**TABLE - 6**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**SVOC SOIL SAMPLE RESULTS**

Sample Number	E00L7	E00H6	E00H1	E00G8	E00G0	E00H9	E00G3	E00G2	E00H4	E00H3	E00H7									
Sampling Location	X101	X102	X105	X118	X119	X122	X126	X128	X132	X133	X139									
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil									
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg									
Date Sampled	11/08/2001	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01	11/6/01									
Time Sampled	12:20	15:00	12:45	11:40	09:20	16:35	10:00	09:45	14:15	14:05	15:20									
%Moisture	28	18	21	19	25	31	28	21	26	24	19									
pH	6.3	7.0	7.5	7.5	7.0	7.7	6.7	7.2	7.5	7.6	7.2									
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
Semivolatile Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Phenanthrene	30	J							530				860		750		1300		540	
Fluoranthene	77	J	580		580		620		690		580		1200		1100		1300		1100	
Pyrene	63	J			510		460		520				880		910		1200		1300	
Benzo(a)anthracene	31	J															630		620	
Chrysene	49	J											620		480		790		670	
Benzo(b)fluoranthene	55	J											720				740		560	
Benzo(k)fluoranthene	45	J											500				770		650	
Benzo(a)pyrene	33	J											530				720		580	

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**TABLE - 7**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**INORGANIC SURFACE WATER SAMPLE RESULTS**

			Cal Sag Bkg		Mosq Creek Bkg		Stony Creek Bkg		Stony Creek		Mosquito Creek				Cal Sag			
Sample Number :	Surface Water SCDM (Environmental) ug/L		ME00J5		ME00L8		ME00K5		ME00J3		ME00K6		ME00K7		ME00J4		ME00K8	
Sampling Location :			S101		S102		S103		S104		S106		S150		S114		FIELD BLANK	
Matrix :			Water		Water		Water		Water		Water		Water		Water		Water	
Units :			ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :			11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :			11:15		13:20		15:45		09:00		16:15		16:15		10:40		17:00	
%Solids :	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	Acute	Chronic	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ARSENIC	150	340	6.1	U	6.1	U	6.1	U			7.4		6.1	U			6.1	U
CHROMIUM	—	—	1.6	U	1.6	U	1.6	U							2.2		1.6	U
COPPER	9	13	10.1		1.6	U	2.8				5.7		3.4				1.6	U
LEAD	2.5	65	2.4		2.4	U	2.4	U			8.7		6.7				2.4	U
NICKEL	52	470	17.7		3.0	U	3.0	U			7.5		6.6				3.0	U
VANADIUM	—	—	2.0		1.8	U	1.8	U			1.8		1.8	U			1.8	U
ZINC	120	120	33.1		12.6	U	12.6	U	32.2		88.2		71.7				12.6	U

8.7 Bold value exceeds Surface Water SCDM.

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**TABLE - 8**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL DATA**  
**NOVEMBER 2001 INVESTIGATION**  
**ONTARIO SEDIMENT BENCHMARK COMPARISON**  
**INORGANIC COMPOUNDS**

			Cal Sag Bkg		Mosq Creek Bkg		Stony Creek Bkg		Stony Creek			
Sample Number :	Ontario Sediment Benchmarks 08/1993 (ppm)		ME00J6		ME00L9		ME00K4		ME00J2		ME00K3	
Sampling Location :			X201		X202		X203		X204		X205	
Matrix :			Soil		Soil		Soil		Soil		Soil	
Units :			mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :			11/07/2001		11/08/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :			11:30		13:20		15:45		09:00		15:15	
%Solids :			44.3		77.7		80.2		51.8		50.9	
Dilution Factor :			1.0		1.0		1.0		1.0		1.0	
ANALYTE	LEL	SEL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	--	--	1.9		0.64	UJ	0.62	U	2.6		3.9	
ARSENIC	6	33	5.3		5.7		10.2					
BARIUM	--	--	152		43.0		39.7		356		202	
CADMIUM	0.6	10	2.1		0.10	U	0.26		1.2		5.9	
CHROMIUM	26	110	42.2	J	9.3		10.3	J				
COPPER	16	110	89.6		18.6		33.4				157	
IRON	2%	4%	24100		14100		18900					
LEAD	31	250	183		24.4		32.0		471		670	
MERCURY	0.2	2	0.26		0.060	U	0.060	U	4.4		1.2	
NICKEL	16	75	19.6		16.5		22.7					
SELENIUM	--	--	1.0		0.57	U	0.55	U	1.8			
SILVER	--	--	1.5		0.23	U	0.22	U	8.0		0.60	
SODIUM	--	--	964		520		776					
THALLIUM	--	--	1.6	U	0.90	U	0.87	U				
VANADIUM	--	--	12.0		14.3		13.0					
ZINC	120	820	533		60.2		142				771	
CYANIDE	--	--	0.21	UJ	0.12	UJ	0.12	UJ				

**33.4** Bold text exceeds Ontario Sediment Benchmarks.

LEL - Lowest Effect Level

SEL - Severe Effect Level

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**TABLE - 8**  
**KEY SAMPLE SUMMARY TABLE**  
**CLARK/BLEU ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**ONTARIO SEDIMENT BENCHMARK COMPARISON**  
**SVOCs**

		Cal Sag Background				Stony Creek Bkg		Stony Creek				Stony Creek		
Sample Number :	Ontario Sediment Benchmarks 08/1993 (ppm)	E00J6	E00J6DL	E00K4	E00J2	E00K3	E00K3DL							
Sampling Location :		X201	X201	X203	X204	X205	X205							
Matrix :		Soil	Soil	Soil	Soil	Soil	Soil							
Units :		ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg							
Date Sampled :		11/07/2001	11/07/2001	11/07/2001	11/07/2001	11/07/2001	11/07/2001							
Time Sampled :		11:30	11:30	15:45	09:00	15:15	15:15							
%Moisture :		63	63	21	50	46	46							
pH :		7.4	7.4	7.7	7.8	7.9	7.9							
Dilution Factor :	1.0	2.0	1.0	1.0	1.0	3.0								
Semivolatile Compound	LEL	SEL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag		
Phenanthrene	560	950,000	2800		2900		140	J			4100		5300	
Anthracene	220	370,000	690	J	770	J	21	J			1100		1400	J
Fluoranthene	750	1,020,000	5600		6400		150	J	1500		6200		9800	
Pyrene	490	850,000	5800		5600		160	J	1800	J	8500		10000	
Butylbenzylphthalate	—	--	280	J	290	J	420	U			910			
Benzo(a)anthracene	320	1,480,000	3300		3200		56	J	1200		3700		3300	
Chrysene	340	460,000	3200		3600		110	J	1500		3200		4300	
bis(2-Ethylhexyl)phthalate	—	--	9600		11000		440	U			4600		5800	
Benzo(b)fluoranthene	—	--	5300		5500		110	J	1200		4500	J	4500	J
Benzo(k)fluoranthene	240	1,340,000	2200		2600		51	J	1100		3000	J	4000	J
Benzo(a)pyrene	370	1,440,000	3000		3500		60	J	1400		3400	J	4000	J
Indeno(1,2,3-cd)pyrene	200	320,000	1500		1500	J	31	J	560	J	1600	J	2100	J
Benzo(g,h,i)perylene	170	320,000	1300		1300	J	51	J	540	J	1400	J	1900	J

19000 Bold Concentration exceeds Soil Chemical Data Matrix (SCDM)

LEL - Lowest Effect Level

SEL - Severe Effect Level

DISCLAIMER: This package has been electronically assessed as an added service to our customer. It has not been either validated or approved by Region 5 and any subsequent use by the data user is strictly at the risk of the data user.

Region 5 assumes no responsibility for use of unvalidated data.

**TABLE - 8**  
**KEY SAMPLE TABLE SUMMARY**  
**CLARK/BLUE ISLAND ANALYTICAL RESULTS**  
**NOVEMBER 2001 INVESTIGATION**  
**ONTARIO SEDIMENT BENCHMARK**  
**PESTICIDE/PCB SEDIMENT RESULTS**

			Cal Sag Bkg		Stony Creek Bkg		Stony Creek						Cal Sag		Cal Sag			
Sample Number :	Ontario Sediment Benchmarks 08/1993 (ppm)		E00J6		E00K4		E00J2		E00J2DL		E00K3		E00K2		E00J8		E00J7	
Sampling Location :			X201		X203		X204		X204		X205		X212		X214		X215	
Matrix :			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units :			ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Date Sampled :			11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001		11/07/2001	
Time Sampled :			11:30		15:45		09:00		09:00		15:15		13:00		12:15		12:00	
%Moisture :			63		21		50		50		46		58		68		61	
pH :			7.4		7.7		7.8		7.8		7.9		7.1		7.3		7.4	
Dilution Factor :			1.0		1.0		1.0		2.0		1.0		1.0		1.0		1.0	
Pesticide/PCB Compound	LEL	SEL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
beta-BHC	5	21,000	4.6	U	2.2	U							15		15			
Heptachlor	--	--	4.6	U	2.2	U					3.8	J						
Dieldrin	2	91,000	10	J	4.2	U					8.1	J						
Endrin	3	130,000	8.9	U	4.2	U					11	J			16		16	
Endosulfan sulfate	--	--	11	J	4.2	U					7.8	J						
4,4'-DDT	7	12,000	19	J	4.2	U	120	J	130	J								
alpha-Chlordane	7	6,000	9.5	J	2.2	U	16	J	19	J	15	J						

16 Bold text exceeds Ontario Sediment Benchmarks.

DISCLAIMER: This package has been electronically assessed as an added service to our customer. It has not been either validated or approved by Region 5 and any subsequent use by the data user is strictly at the risk of the data user. Region 5 assumes no responsibility for use of unvalidated data.



**TABLE - 9**  
**CLARK/BLUE ISLAND**  
**NOVEMBER 2001 INVESTIGATION**  
**SAMPLE SUMMARY TABLE**

Sample Location	Depth	Analysis	Description	Location Description
X-101	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Background / Elizabeth Conkley Woods Forest Preserve
X-102	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	Park
X-105	0 - 1"	Metals/SVOC	Dark brown-black loam	Residential
X-110	0 - 1"	Metals/SVOC	Dark brown-black clayey loam	Residential
X-112	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Residential
X-113	0 - 1"	Metals/SVOC	Dark brown-black silty loam	High School
X-117&118	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	High School
X-119	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	Elementary School
X-120	2" - 3"	Metals/SVOC	Mottled gray/black silty clay below sand & gravel	Drainage way next to Clark bundle storage area.
X-122	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	Residential
X-124	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	Residential
X-125	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	Middle School
X-126	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Residential
X-128	0 - 1"	Metals/SVOC	Dark brown-black sandy loam	Residential
X-130	0 - 1"	Metals/SVOC	Dark brown-black loam, trace of gravel	Residential
X-132	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Residential
X-133	0 - 1"	Metals/SVOC	Dark brown-black loam	Residential
X-136	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Residential
X-139	0 - 1"	Metals/SVOC	Dark brown-black clayey loam	Park
X-143	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Residential
X-144	0 - 1"	Metals/SVOC	Dark brown-black clayey loam	Residential
X-145	0 - 1"	Metals/SVOC	Dark brown-black silty loam	Residential
X-201	Surface	TCL	Dark gray sandy silt and clay, petroleum odor	Background Cal Sag Channel Sample
X-202	2" - 4"	TCL	Gray brown silty clay, trace of sand and gravel	Background Mosquito Creek Sample
X-203	0 - 6"	TCL	Mottled gray/brown sandy clay	Background Stony Creek Sample
X-204	2" - 6"	TCL	Black sand and silt, more silty & clayey at depth	Convergence of Stony Creek and Cal Sag Channel.
X-205	2" - 6"	TCL	Black silty sand, organics, organic odor	Stony Creek, upstream from forested wetland area.
X-206	0 - 4"	TCL	Black clayey silt, strong petroleum odor	Mosquito Creek prior to convergence with Stony Creek.
X-207	1" - 3"	TCL	Black clayey silt, sheen, grading into Brn silty clay	Mosquito Creek near concrete discharge across from refinery.
X-208	2" - 4"	TCL	Dark brown/dark gray streaked silty clay	Mosquito Creek between Homan and Kedzie.
X-209	2" - 6"	TCL	Dark gray/black silty clay, gray brown with depth	Mosquito Creek near concrete culvert on west side of Homan Ave.
X-210	3" - 6"	TCL	Dark brown/black silty clay, soft, organic rich	Mosquito Creek, mid northwest property.
X-211	2" - 4"	TCL	Dark brown sand and silt, with clay, organic rich	Mosquito Creek just downstream of NW tank farm discharge pipe.
X-212	Surface	TCL	Dark gray silt and clay, trace sand	Cal Sag Channel, marine loading dock, east of X-213
X-213	Surface	VOC	Gray clay, lots of rock	Cal Sag Channel, marine loading dock east of X-214.
X-214&250	Surface	TCL	Dark clayey silt, trace of sand, slight odor	Cal Sag Channel, western most marine loading dock sample.
X-215	Surface	TCL	Dark gray clayey silt, trace of sand	Cal Sag Channel, near surface water discharge.
S-101	8'	TCL	Surface Water	Background Cal Sag Channel Sample
S-102	Surface	TCL	Surface Water	Background Mosquito Creek Sample
S-103	0 - 6"	TCL	Surface Water - sheen noted on surface	Background Stony Creek Sample
S-104	Surface	TCL	Surface Water	Convergence of Stony Creek and Cal Sag Channel.
S-106&150	Surface	TCL	Surface Water	Mosquito Creek prior to convergence with Stony Creek.
S-114	8'	TCL	Surface Water	Cal Sag near marine loading dock area.

TCL - Target Compound List (Appendix-A)

## **APPENDIX – A**

## **TARGET COMPOUND LIST**

### **Volatile Target Compounds**

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

### **Base/Neutral Target Compounds**

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl) Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis (2-Chloroisopropyl) Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether
Hexachlorobutadiene	Anthracene
2-Methylnaphthalene	Di-n-Butylphthalate

1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3-3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Ideno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

#### Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	



### Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlordane
Heptachlor	gamma-Chlordane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

### Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobalt	Vanadium
Copper	Zinc
Iron	Cyanide
Lead	Sulfide
Magnesium	

## **APPENDIX – B**

## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 09:20

**PHOTO BY:** Jim Salch

**PHOTO NO:** 1-Roll 1

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-119 in Elementary School yard.



**DATE:** November 6, 2001

**TIME:** 09:20

**PHOTO BY:** Jim Salch

**PHOTO NO:** 2-Roll 1

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-119 in Elementary School yard.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 09:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 3-Roll 1

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-128 in residential yard.



**DATE:** November 6, 2001

**TIME:** 09:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 4-Roll 1

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-128 in residential yard.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 10:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 5-Roll 1

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-126 in residential location.



**DATE:** November 6, 2001

**TIME:** 10:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 6-Roll 1

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-126 in residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 10:30

**PHOTO BY:** Jim Salch

**PHOTO NO:** 9-Roll 1

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-124 at residential location.



**DATE:** November 6, 2001

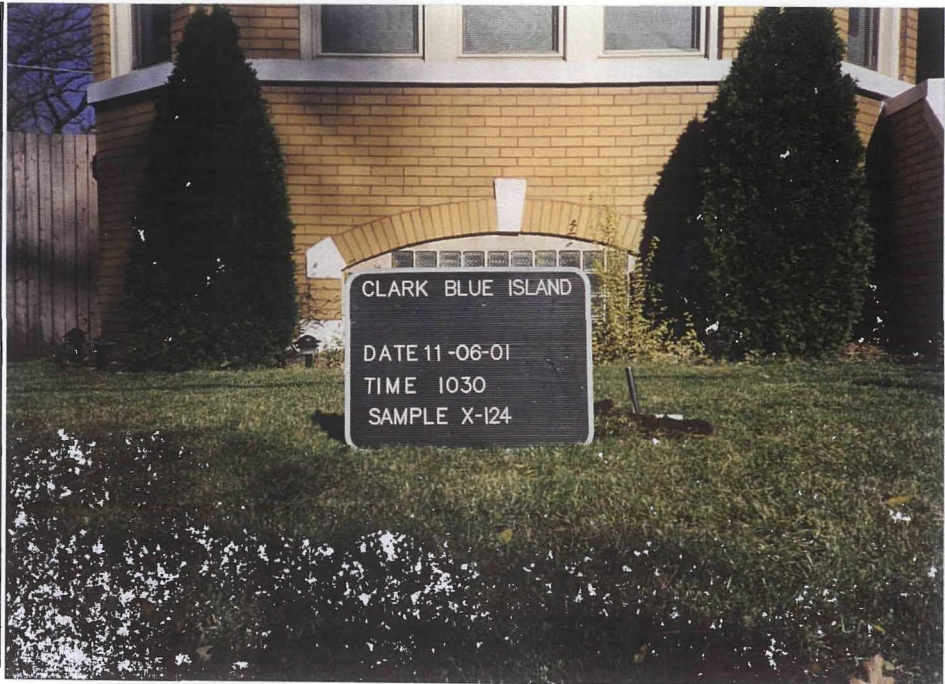
**TIME:** 10:30

**PHOTO BY:** Jim Salch

**PHOTO NO:** 10-Roll 1

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-124 at residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 11:30

**PHOTO BY:** Jim Salch

**PHOTO NO:** 11-Roll 1

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-113 located at high school baseball field.



**DATE:** November 6, 2001

**TIME:** 11:30

**PHOTO BY:** Jim Salch

**PHOTO NO:** 12-Roll 1

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-113 located at high school baseball field.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 11:40

**PHOTO BY:** Jim Salch

**PHOTO NO:** 13-Roll 1

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-117 and duplicate sample X-118 at high school practice baseball field. Refinery in background.



**DATE:** November 6, 2001

**TIME:** 11:40

**PHOTO BY:** Jim Salch

**PHOTO NO:** 14-Roll 1

**DIRECTION:** Northwest

**COMMENTS:** Photo of soil sample location X-117 and duplicate sample X-118 at high school practice baseball field. Refinery in background.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 12:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 15-Roll 1

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-143 in residential location.



**DATE:** November 6, 2001

**TIME:** 12:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 1-Roll 2

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-143 in residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 12:20

**PHOTO BY:** Jim Salch

**PHOTO NO:** 2-Roll 2

**DIRECTION:** North

**COMMENTS:** Photo of soil sample X-110 collected at a residential location.



**DATE:** November 6, 2001

**TIME:** 12:20

**PHOTO BY:** Jim Salch

**PHOTO NO:** 3-Roll 2

**DIRECTION:** East

**COMMENTS:** Photo of soil sample X-110 collected at residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

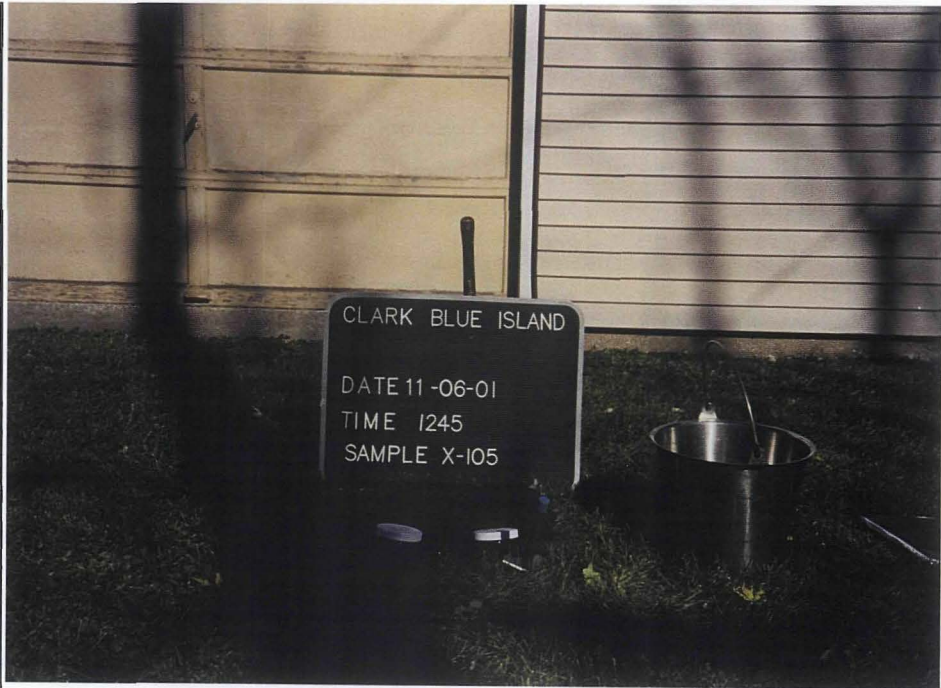
**TIME:** 12:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 4-Roll 2

**DIRECTION:** North

**COMMENTS:** Photo of soil sample X-105 at residential location.



**DATE:** November 6, 2001

**TIME:** 12:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 5-Roll 2

**DIRECTION:** West

**COMMENTS:** Photo of soil sample X-105 at residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 13:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 6-Roll 2

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-130 in residential location.



**DATE:** November 6, 2001

**TIME:** 13:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 7-Roll 2

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-130 in residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 14:05

**PHOTO BY:** Jim Salch

**PHOTO NO:** 8-Roll 2

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-133 in residential location.



**DATE:** November 6, 2001

**TIME:** 14:05

**PHOTO BY:** Jim Salch

**PHOTO NO:** 9-Roll 2

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-133 in residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 14:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 10-Roll 2

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-132 in residential location.



**DATE:** November 6, 2001

**TIME:** 14:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 11-Roll 2

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-132 in residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 14:35

**PHOTO BY:** Jim Salch

**PHOTO NO:** 12-Roll 2

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-112 in residential location.



**DATE:** November 6, 2001

**TIME:** 14:35

**PHOTO BY:** Jim Salch

**PHOTO NO:** 13-Roll 2

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-112 in residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 15:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 14-Roll 2

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-102 at Public park.



**DATE:** November 6, 2001

**TIME:** 15:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 1-Roll 3

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-102 at Public park.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 15:20

**PHOTO BY:** Jim Salch

**PHOTO NO:** 2-Roll 3

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-139 at public park.



**DATE:** November 6, 2001

**TIME:** 15:20

**PHOTO BY:** Jim Salch

**PHOTO NO:** 3-Roll 3

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-139 at public park.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 15:50

**PHOTO BY:** Jim Salch

**PHOTO NO:** 4-Roll 3

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-136. Sample collected at a residential location.



**DATE:** November 6, 2001

**TIME:** 15:50

**PHOTO BY:** Jim Salch

**PHOTO NO:** 5-Roll 3

**DIRECTION:** South

**COMMENTS:** Photo of soil sample location X-136. Sample collected at a residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 16:35

**PHOTO BY:** Jim Salch

**PHOTO NO:** 6-Roll 3

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-122. Sample collected at a residential location.



**DATE:** November 6, 2001

**TIME:** 16:35

**PHOTO BY:** Jim Salch

**PHOTO NO:** 7-Roll 3

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-122. Sample collected at a residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005

**CERCLIS ID:** ILN 000 508 156

**COUNTY:** Cook

**DATE:** November 6, 2001

**TIME:** 17:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 8-Roll 3

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-144. Sample collected at a residential location.



**DATE:** November 6, 2001

**TIME:** 17:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 9-Roll 3

**DIRECTION:** East

**COMMENTS:** Photo of soil sample location X-144. Sample collected at a residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 7, 2001

**TIME:** 09:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 10-Roll 3

**DIRECTION:** East

**COMMENTS:** Photo of surface water sample S-104 and sediment sample X-204. Samples collected from Stony Creek at convergence with the Cal Sag Channel.



**DATE:** November 7, 2001

**TIME:** 09:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 11-Roll 3

**DIRECTION:** South

**COMMENTS:** Photo of surface water sample S-104 and sediment sample X-204. Samples collected from Stony Creek at convergence with the Cal Sag Channel.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 7, 2001

**TIME:** 10:40

**PHOTO BY:** Jim Salch

**PHOTO NO:** 12-Roll 3

**DIRECTION:** Northeast

**COMMENTS:** Photo of surface water sample location S-114. Sample collected next to marine loading dock on Cal Sag Channel.



**DATE:** November 7, 2001

**TIME:** 09:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 13-Roll 3

**DIRECTION:** South

**COMMENTS:** Photo of surface water sample S-101. Sample collected at background location on the Cal Sag Channel.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005

**CERCLIS ID:** ILN 000 508 156

**COUNTY:** Cook

**DATE:** November 7, 2001

**TIME:** 11:30

**PHOTO BY:** Jim Salch

**PHOTO NO:** 1-Roll 4

**DIRECTION:** East

**COMMENTS:** Photo of sediment sample location X-201. Sample collected at background location on the Cal Sag Channel.



**DATE:** November 7, 2001

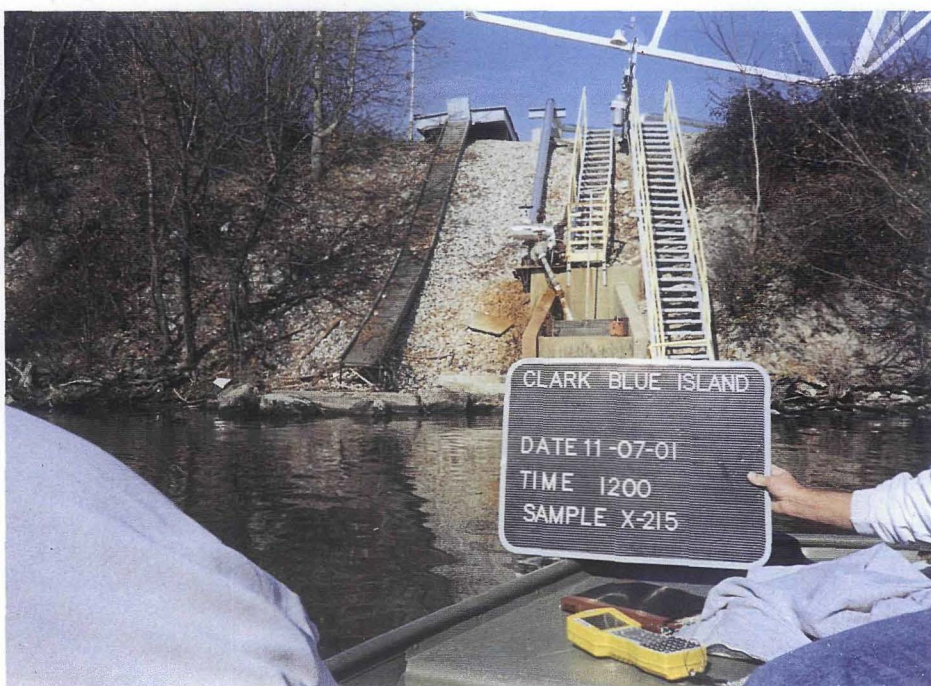
**TIME:** 12:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 2-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of sediment sample X-215. Sample collected from Cal Sag Channel, next to storm water discharge.





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**DATE:** November 7, 2001

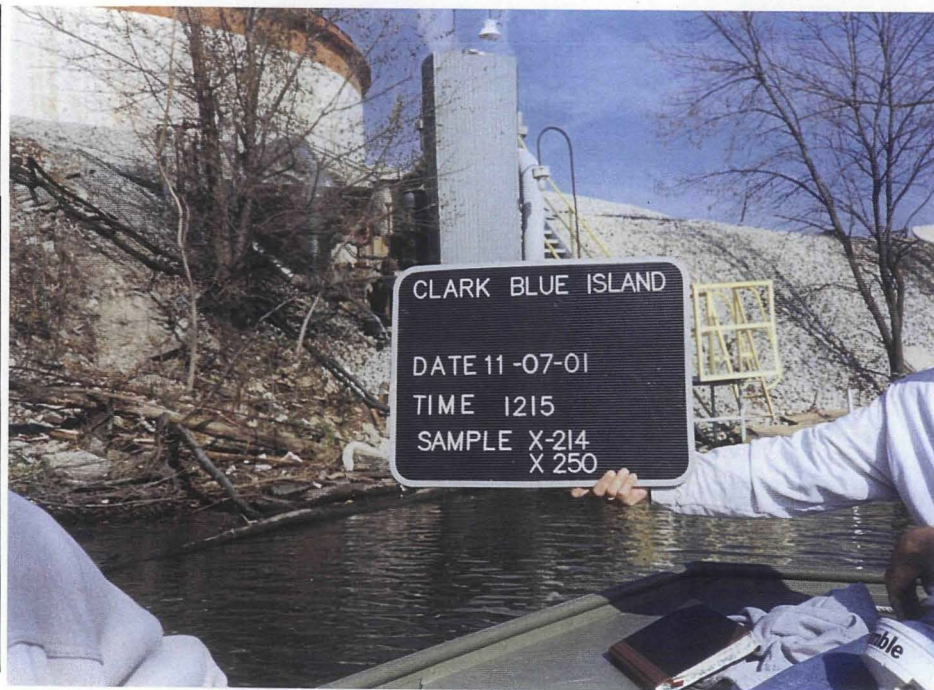
**TIME:** 12:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 3-Roll 4

**DIRECTION:** Northeast

**COMMENTS:** Photo of sediment sample location X-214 and duplicate X-250. Samples collected from the Cal Sag Channel at the western end of marine loading dock platform.



**DATE:** November 7, 2001

**TIME:** 12:30

**PHOTO BY:** Jim Salch

**PHOTO NO:** 4-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of sediment sample location X-213. Sample collected from the Cal Sag Channel out from the marine loading dock platform. Could not obtain sample adjacent to the platform. Had to move out into channel. Only sampled for VOCs at this location.





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**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 7, 2001

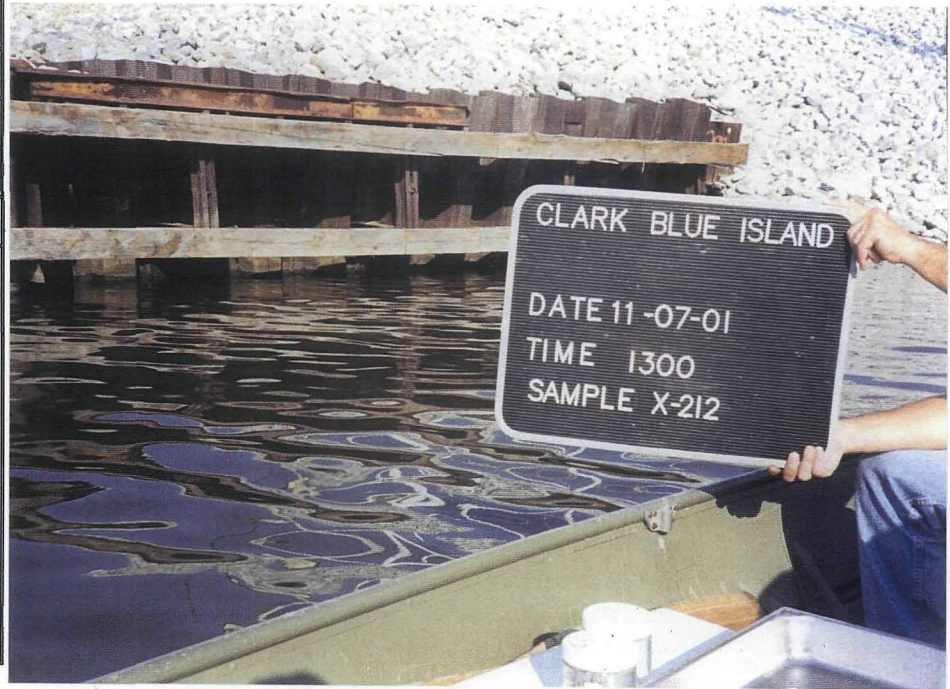
**TIME:** 13:00

**PHOTO BY:** Jim Salch

**PHOTO NO:** 5-Roll 4

**DIRECTION:** Northeast

**COMMENTS:** Photo of sediment sample location X-212. Sample collected from the Cal Sag Channel at eastern end of the marine loading dock platform.



**DATE:** November 7, 2001

**TIME:** 15:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 6-Roll 4

**DIRECTION:** Northwest

**COMMENTS:** Photo of sediment sample location X-205. Sample collected from Stony Creek upstream of the forested wetland.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 7, 2001

**TIME:** 15:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 7-Roll 4

**DIRECTION:** Southeast

**COMMENTS:** Photo of sediment sample location X-205. Sample collected from Stony Creek upstream of the forested wetland.



**DATE:** November 7, 2001

**TIME:**

**PHOTO BY:** Jim Salch

**PHOTO NO:** 8-Roll 4

**DIRECTION:**

**COMMENTS:** Photo of oily sheen observed at upstream location on Stony Creek before convergence with Mosquito Creek.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 7, 2001

**TIME:** 15:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 9-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of surface water sample location S-103, and sediment sample location X-203. Samples collected from Stony Creek at background location.



**DATE:** November 7, 2001

**TIME:** 16:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 10-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of surface water sample location S-106, and sediment sample location X-206. Duplicate surface water sample S-150 was also collected at this location on Mosquito Creek prior to convergence with Stony Creek.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 7, 2001

**TIME:** 16:15

**PHOTO BY:** Jim Salch

**PHOTO NO:** 11-Roll 4

**DIRECTION:** East

**COMMENTS:** Photo of surface water sample location S-106, and sediment sample location X-206. Duplicate surface water sample S-150 was also collected at this location on Mosquito Creek prior to convergence with Stony Creek.



**DATE:** November 8, 2001

**TIME:** 08:05

**PHOTO BY:** Jim Salch

**PHOTO NO:** 12-Roll 4

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-145. Sample collected from residential location.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 8, 2001

**TIME:** 08:05

**PHOTO BY:** Jim Salch

**PHOTO NO:** 13-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-145. Sample collected from residential location.



**DATE:** November 8, 2001

**TIME:** 08:25

**PHOTO BY:** Jim Salch

**PHOTO NO:** 14-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of soil sample location X-120. Sample collected from area just outside the fence of area where Clark stored old bundles from refinery. Location near drainage ditch.





## ILLINOIS EPA PHOTO LOG

**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 8, 2001

**TIME:** 08:25

**PHOTO BY:** Jim Salch

**PHOTO NO:** 15-Roll 4

**DIRECTION:** West

**COMMENTS:** Photo of soil sample location X-120. Sample collected from area just outside the fence of area where Clark stored old bundles from refinery. Location near drainage ditch.



**DATE:** November 8, 2001

**TIME:** 08:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 16-Roll 4

**DIRECTION:** North

**COMMENTS:** Photo of sediment sample location X-207. Samples collected from Mosquito Creek just downstream of concrete drainage tile.





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**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 8, 2001

**TIME:** 08:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 17-Roll 4

**DIRECTION:** West

**COMMENTS:** Photo of sediment sample location X-207. Samples collected from Mosquito Creek just downstream of concrete drainage tile.



**DATE:** November 8, 2001

**TIME:** 09:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 18-Roll 4

**DIRECTION:** South

**COMMENTS:** Photo of sediment sample location X-208. Samples collected from Mosquito Creek, north of Martin Oil property.





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**DATE:** November 8, 2001

**TIME:** 09:45

**PHOTO BY:** Jim Salch

**PHOTO NO:** 19-Roll 4

**DIRECTION:** East

**COMMENTS:** Photo of sediment sample location X-208. Samples collected from Mosquito Creek, north of Martin Oil property.



**DATE:** November 8, 2001

**TIME:** 10:05

**PHOTO BY:** Jim Salch

**PHOTO NO:** 20-Roll 4

**DIRECTION:** West

**COMMENTS:** Photo of sediment sample location X-209. Sample collected from Mosquito Creek just west of Homan Ave. near concrete culvert.





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**SITE NAME:** Clark/Blue Island

**LPC #:** LPC# 0310240005    **CERCLIS ID:** ILN 000 508 156    **COUNTY:** Cook

**DATE:** November 8, 2001

**TIME:** 10:05

**PHOTO BY:** Jim Salch

**PHOTO NO:** 21-Roll 4

**DIRECTION:** South

**COMMENTS:** Photo of sediment sample location X-209. Sample collected from Mosquito Creek just west of Homan Ave. near concrete culvert.



**DATE:** November 8, 2001

**TIME:** 10:40

**PHOTO BY:** Jim Salch

**PHOTO NO:** 22-Roll 4

**DIRECTION:** South

**COMMENTS:** Photo of sediment sample location X-210. Sample collected from Mosquito Creek in slack water at the Northwest Property.





## ILLINOIS EPA PHOTO LOG

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**DATE:** November 8, 2001

**TIME:** 10:40

**PHOTO BY:** Jim Salch

**PHOTO NO:** 23-Roll 4

**DIRECTION:** East

**COMMENTS:** Photo of sediment sample location X-210. Sample collected from Mosquito Creek in slack water at the Northwest Property.



**DATE:** November 8, 2001

**TIME:** 11:10

**PHOTO BY:** Jim Salch

**PHOTO NO:** 24-Roll 4

**DIRECTION:** West

**COMMENTS:** Photo of sediment sample location X-211. Samples collected from Mosquito Creek where the surface water runoff tile from the Northwest Tank Farm area drains into Mosquito Creek.

